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Vol. II.

No. 12.

PHONOGRAPH

A MONTHLY MAGAZINE

DEVOTED TO

THE SCIENCE OF SOUND . .

AND

. . RECORDING OF SPEECH.

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VOL. 2.

DECEMBER, 1892.

No. 12.

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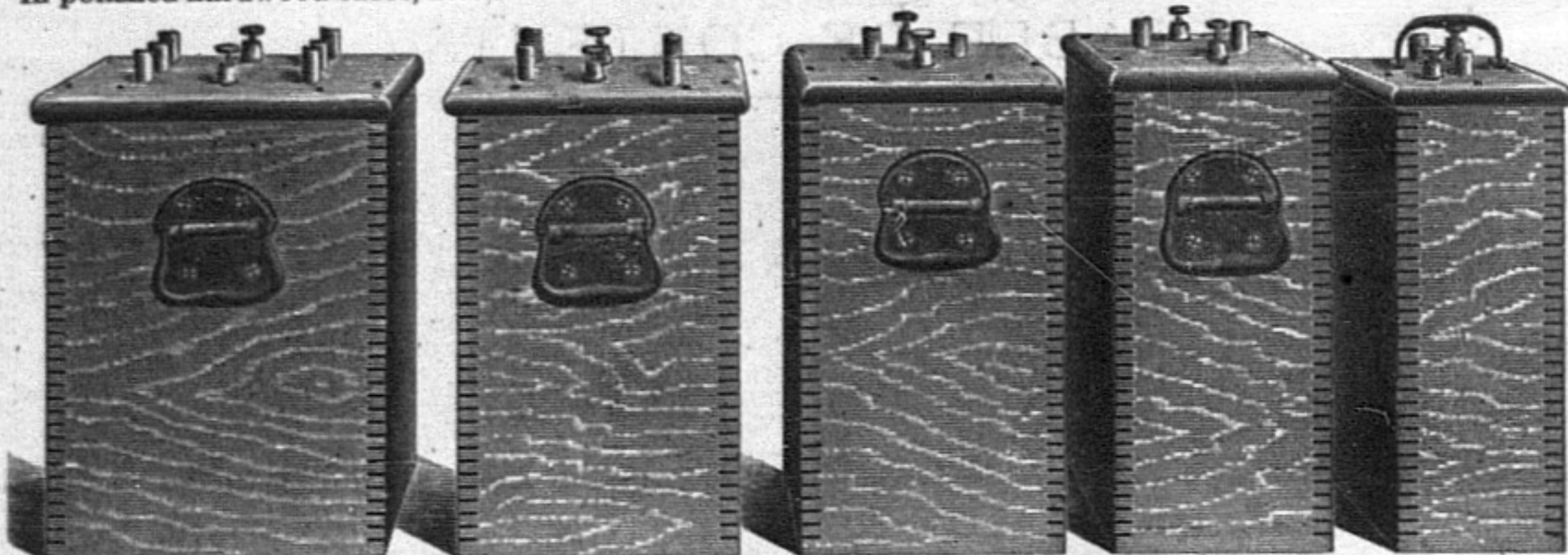
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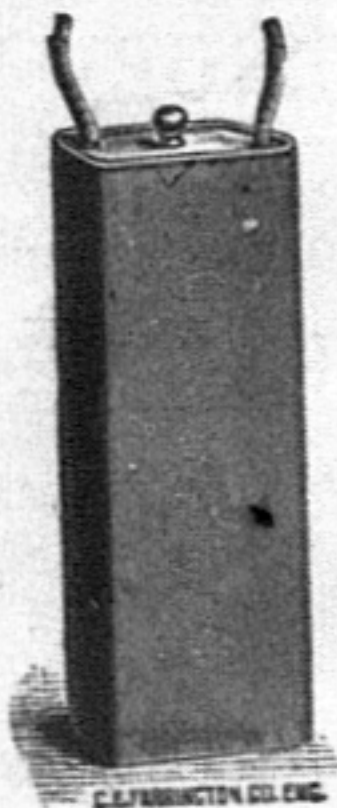
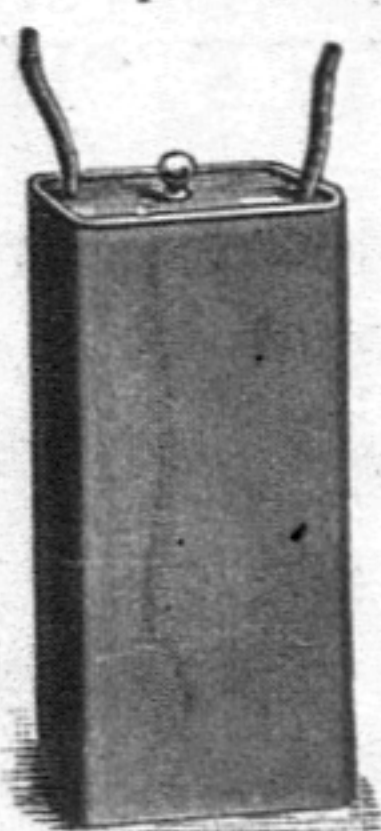
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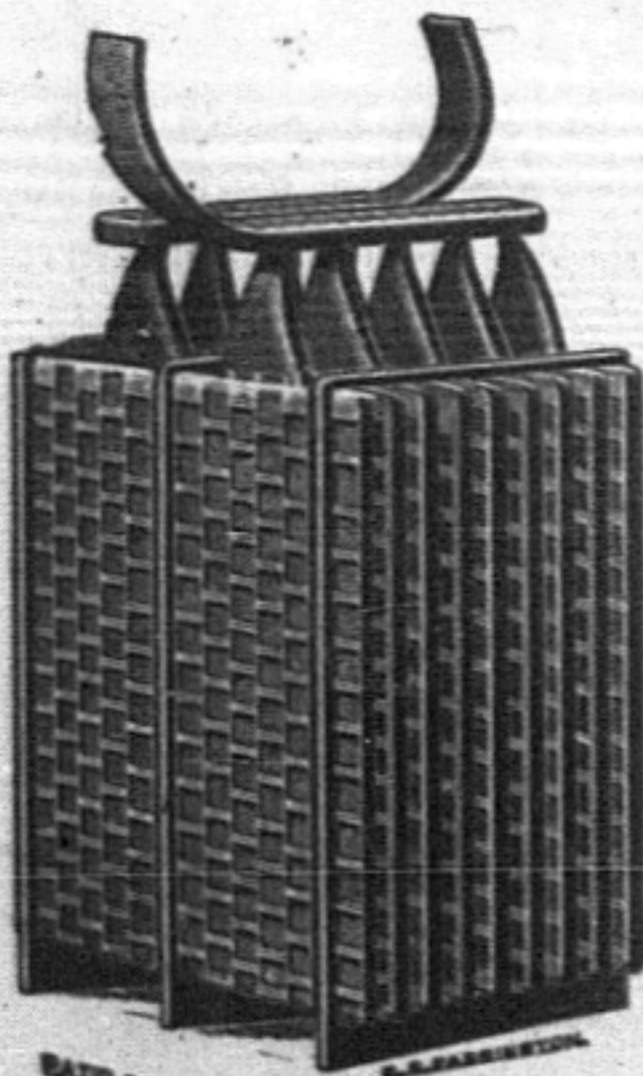
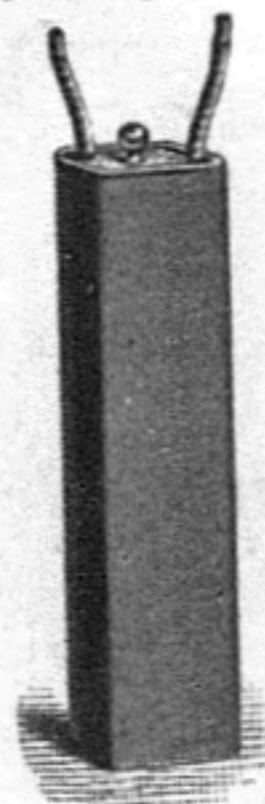
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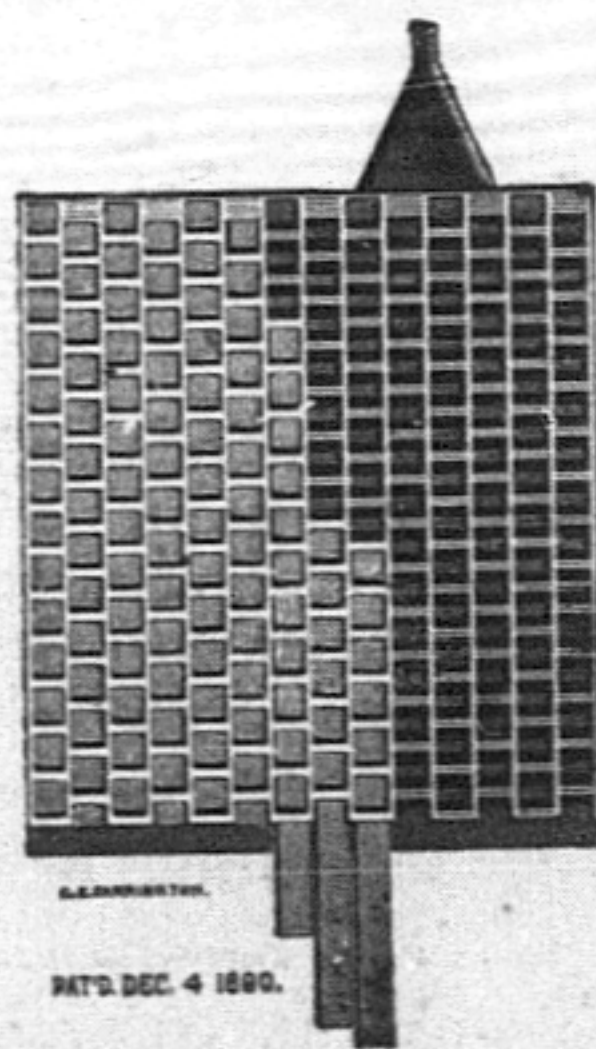
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2. CONVENIENCE.

You dictate alone, at any hour of day or night that suits your convenience.

3. SAVING OF OPERATOR'S TIME.

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4. ACCURACY.

The phonograph can only repeat what has been said to it.

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In cases where you have a number of letters or a long document, necessitating several cylinders, same can be equally distributed among your typewriters, a saving of both time and labor.

We send you sample copy of the "Phonogram." As the name indicates, it is issued in the interests of the Phonograph, and its pages are replete with original, bright and terse subjects pertaining to it.

It is the Official organ of the Phonograph Companies, has a department devoted to the Telephone and Typewriter, and has the latest news pertaining to electrical interests.

Trust you will find it of sufficient interest to fill the blank below.

189

THE PHONOGRAM,

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One Year, commencing
and ending

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The Edison Phonograph Works,
Orange, N. J.

It is with boundless admiration that we witness the wonders which Mr. Thomas A. Edison offers to our vision. The career of this remarkable man is too well known to repeat here. We all know how he applied himself to the study of chemistry at eight years of age; how at twelve he became editor, printer and newsboy, and at fifteen possessed a scientific library of some 900 volumes. We know that since that time he has brought to perfection many inventions, well conceived but imperfectly developed by his predecessors, in the departments of electricity and magnetism, adding fresh discoveries of his own.

The most interesting and perhaps the most important invention at this period is the phonograph, which catches and records sounds in all variety and number.

A gentleman not long since repeated to a PHONOGRAM reporter an incident in the evolution of the phonograph which may be interesting to our readers. Busily engaged with many enterprises, Mr. Edison carried in his mind the idea of a machine that would talk. From time to time he would jot down sketches and memoranda, and one day he said to an old German who

made his models, "I want a machine constructed in a certain manner." He did not give him any hint as to its use.

In time the German was told to bring the machine for examination. Mr. Edison fitted into it a piece of tin foil, and spoke



Mr. George F. Ballou.

into a funnel the familiar verse, "Mary had a little lamb." The German thought he had gone mad; but when Mr. Edison reversed the motion and the phonograph pipingly repeated the stanza, the old mechanic threw up his hands and exclaimed in utter astonishment, "Mein Got, it talks." This was the birth of the phonograph.

The Edison laboratory is the most unique and complete structure of its kind in the world, and in the heart of this vast pile of brick and mortar the little talking machine first saw the light of day.

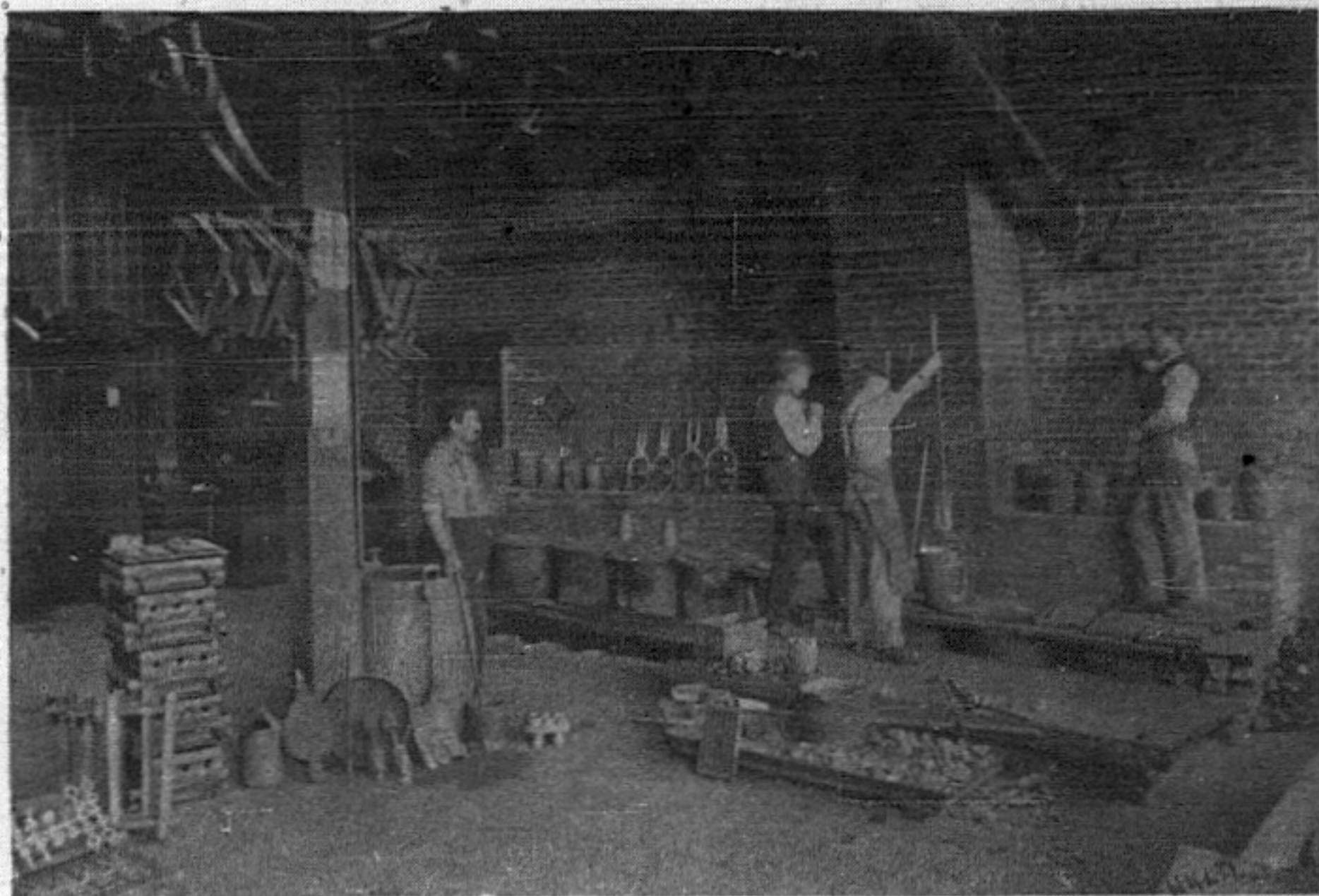
An entire block is occupied by the plant, and there are five different sets of brick buildings with hard-wood interiors. The main one is three stories high, 200 feet deep and 75 wide. There is a library, a lecture room, stock room, department rooms and power room in this structure. The library and office form a hollow square, with three galleries rising to the third floor. The cases contain some 20,000 volumes of scientific works in all languages, and there is a capacity for 100,000 books. Four one story buildings surround the central one. These are used for ore-milling, blacksmithing, the manufacture of patterns, etc. There is a capacity of 320 horse power on the plant, and electricity is supplied for about 900 incandescent lamps.

The Phonograph works are entirely independent of the other establishments of Mr. Edison, but are conveniently located near this magnificent laboratory. The phonograph is Mr. Edison's pet. The instrument of a dozen years ago has disappeared, and in its place we have a scientific marvel, a bunch of iron nerves and sinews which outranks in capacity for labor and endurance any dozen of the most skilled workmen on his place.

Mr. George F. Ballou, the superintendent of the Phonograph works, has been connected with Mr. Edison for about four

years. Mr. Ballou was born in Providence R. I., March 26th, 1846, and is not quite a year older than Mr. Edison. At the age of twelve years he began his apprenticeship as a machinist. During the early part of the war, when but a lad, he served his country for three months in the Ninth Rhode Island Regiment. When he returned he finished his apprenticeship, and then went to Boston, where he was employed by the Grover and Baker Sewing Machine Co., and the Howard Watch and Clock Co. His evenings, for several years, were spent in the Boston Evening High Schools, studying drawing and other branches. In after years Mr. Ballou became a designer of tools, and was employed by the American Watch Company, of Waltham, Mass., where he remained for sixteen years. He there learned the intricate mechanism of watches, and made the four standard astronomical clocks turned out by this company. Two of these clocks remain at the factory, one went to the Wesleyan University at Middletown, Conn., and the fourth was set up by Mr. Ballou at the Signal Service Department, in Washington, D. C. The American Watch Company have their own observatory and transit instruments to make observations; in this technical school Mr. Ballou became experienced in constructing all delicate and intricate machinery. After leaving this company, Mr. Ballou, in conjunction with Professor Rogers, of Harvard College, made for Cornell University the only dividing engine of its class in the world, and through this wonderful piece of mechanism his reputation became familiar to the country.

This machine is for ruling microscopic standards of length on metal or glass. The greatest error of the dividing screw, when tested under a high power objective, was found to be less than $\frac{1}{25000}$ part of an inch. Mr. Ballou is also well known as a maker of fine tools for watches, out-



Foundry—Edison Phonograph Works.



Main Machine Shop—350 feet long—General view—Edison Phonograph Works.

side of watch factories. It is to this man, whose mechanical faculties have been so highly cultivated, that is intrusted the manufacture of that delicate and perfect piece of mechanism, the Phonograph. Mr. Ballou is at his post at all times following up every detail until the machines are completed.

The PHONOGRAM is pleased to present his portrait to its readers.

Mr. Hamilton Miller, the genial office manager of the works, was born in Manchester, England, in 1864. His parents came to New York when he was only a year old, and after being educated in the public and high schools, he entered upon a practical training in accounting. In 1888 he took a position with Mr. Edison, and upon the erection of the immense plant of the Edison Phonograph Works was placed there to systematize and manage the office records and correspondence. This is an important post, as will be seen at a glance. Mr. Miller is a courteous gentleman, and has won high esteem for the manner in which he handles the necessarily vast amount of detail connected with the office.

He is very conservative in giving his opinions on the volume of business, but from intimations, we feel warranted in saying, while the past year has been profitable in this department, the business of the coming year will be doubled.

The capacity of the Phonograph Works is 500 machines a week, and 800 hands can easily be used in this department. At present about 250 hands are working, and there has been a marked increase in orders for machines, which keeps all busily engaged. There is much work being done for the coming Columbian Exposition, and many of the skilled workmen are engaged in night work, in



Mr. Hamilton Miller.

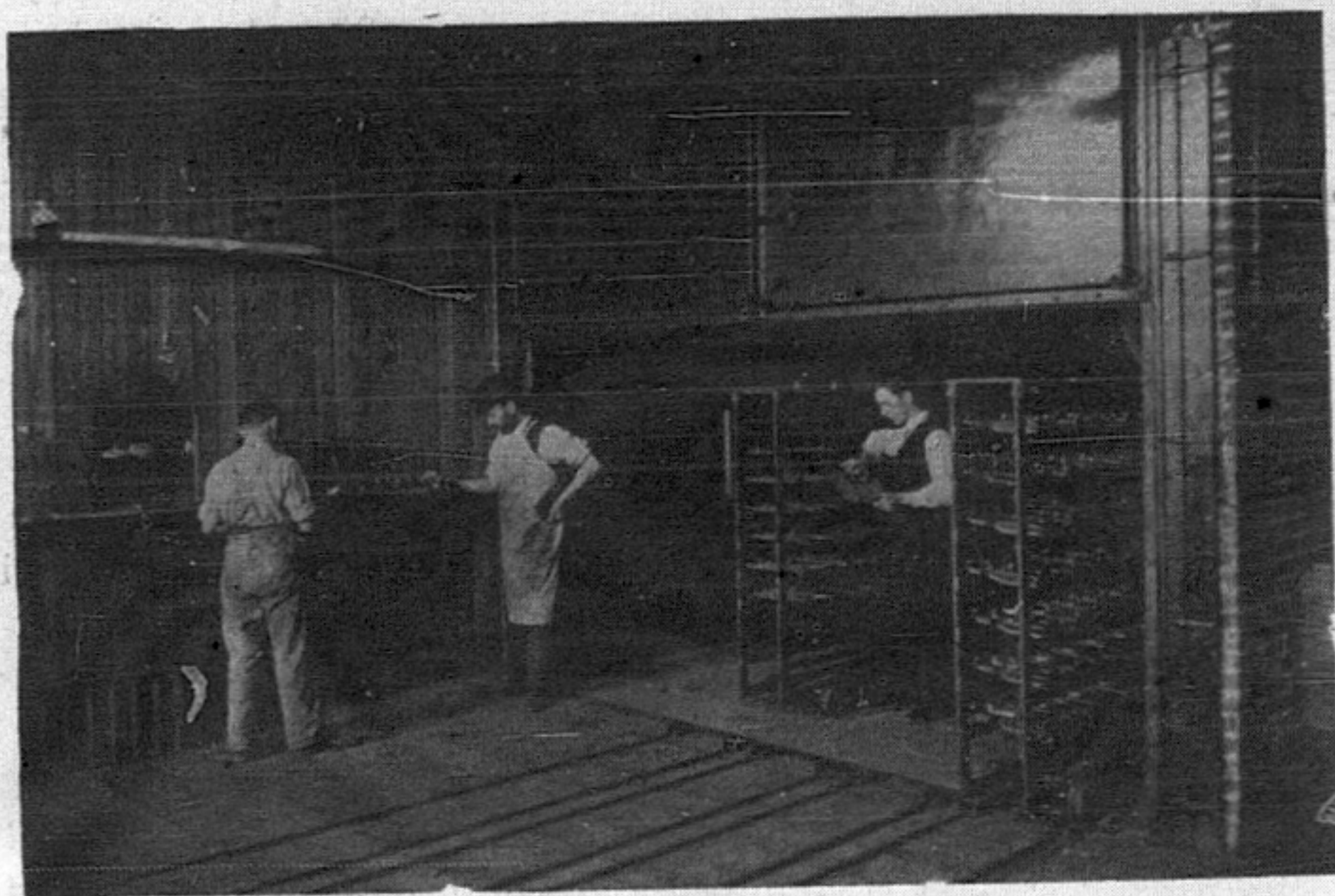
order to push the articles which will be represented.

There is enough interesting machinery used in the manufacture of the Phonograph to afford cuts that would fill this entire journal, and it has been difficult for our artist in the limited space at his disposal to select material; but we think the illustrations will fairly represent some of the processes employed in its manufacture.

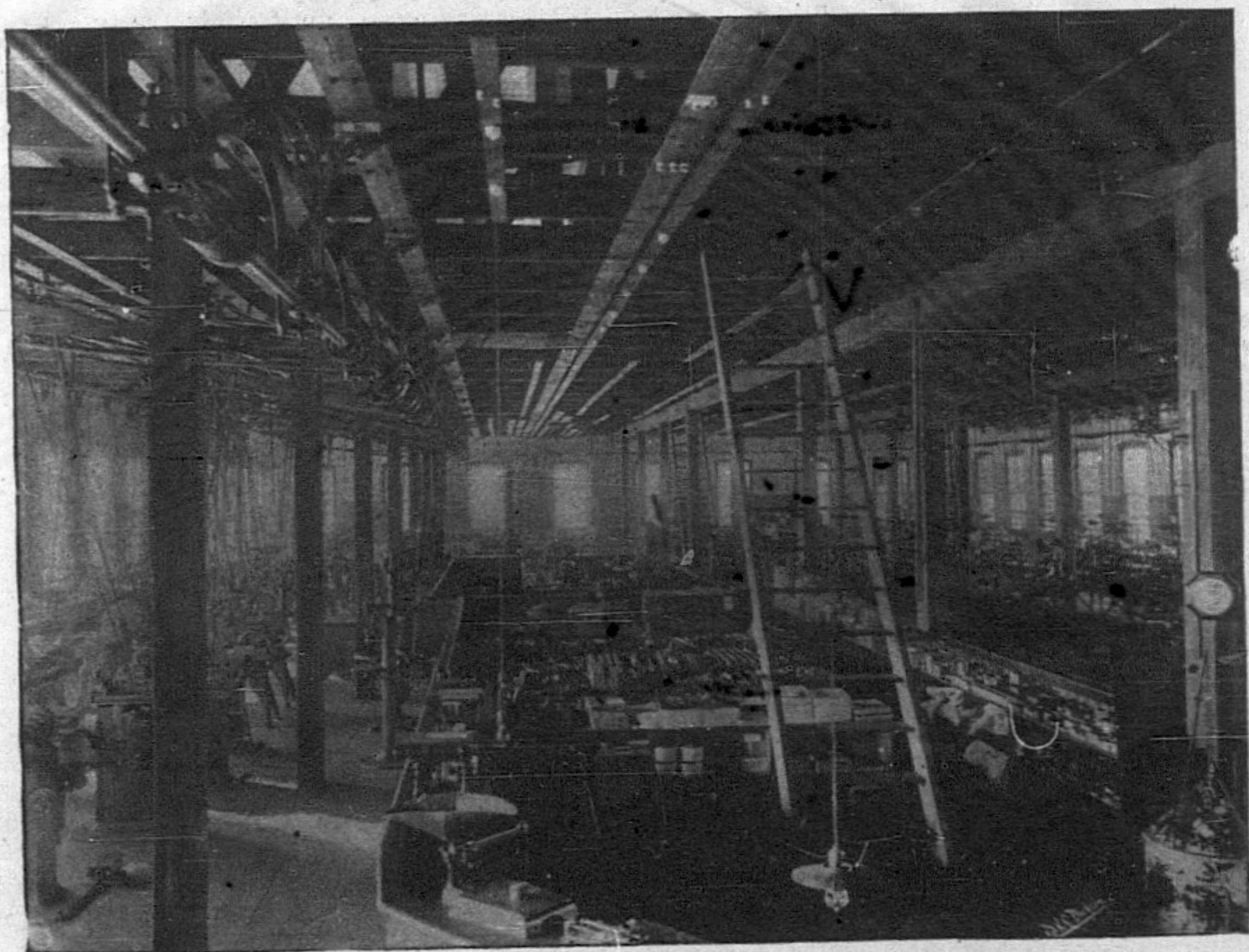
The following is a list of the departments:

A finely equipped tool-room, where all of the special machines and instruments are made for the manufacture of the different parts of the Phonograph.

The iron and brass foundries where all the fine castings are made.



Drying Ovens, Japanning Dept.—Edison Phonograph Works.



Main Machine Shop—View from Center—Edison Phonograph Works.

The carpenter and pattern shop.

Blacksmith's shop.

Nickel-plating room.

Japanning room.

Polishing room.

Punch press room, where the punching and dropping operations are done.

Screw making department, with automatic machines for the different screw machine operations.

Precision screw department, with special machines to make the fine screws which are used to feed the recording and reproducing mechanism across the wax cylinders.

Drill press department, where the drilling and reaming operations are performed.

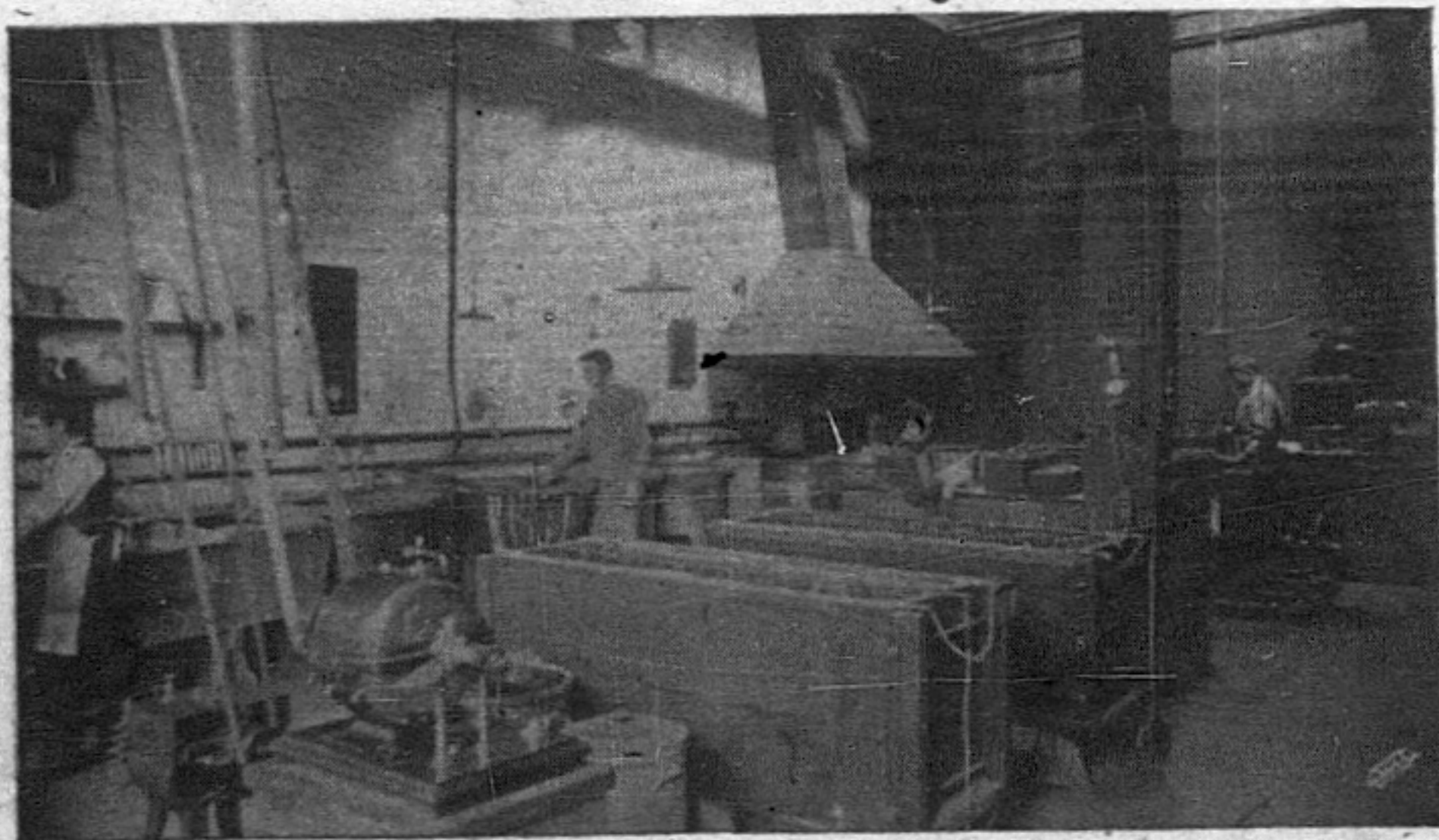
Japan room, where the plain japanning and ornamental work is done.

Sapphire department. In this department all of the recording and reproducing parts of the speaking mechanism are made, also the turning-off knife. This is probably the most interesting department. The recorder stylus, reproducer ball and turning-off knife are made from the best quality of sapphire. The rough stone, which varies in size and shape, is first sawed into thin slabs about .05 of an inch

thick, then into square pieces; those which are to be used for the recorder stylus and reproducer balls, are then concentrated into chucks, and ground and polished to the required diameter. The final polish is done by very fine diamond powder and a wooden or shell cap. The cupping of the recorder stylus is very difficult. It requires long practice, and has to be done by the aid of a powerful microscope. The shaping of the reproducer ball is first done by a diamond tool, and then polished in a special machine so as to make it perfectly spherical. About sixty pieces for the turning-off knives are cemented to a block and the flat sides ground and polished. They are then put into a special machine and polished until perfect cutting edges are obtained.

The wax cylinder department.

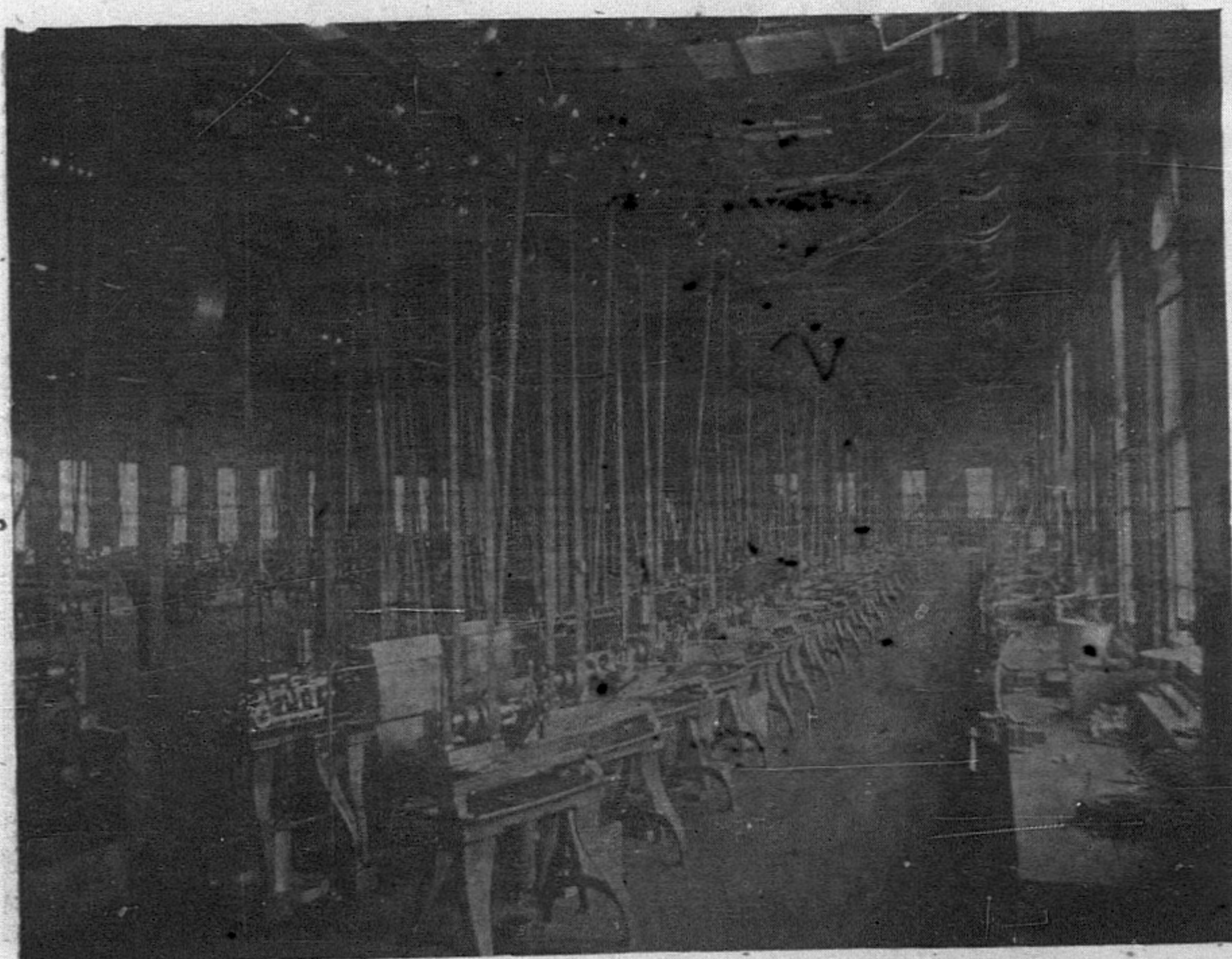
The mixing of the wax is done by one man, so that the secret is preserved. When the component parts are ready the cylinders are moulded and then seasoned for about four weeks. They are then re-armed and turned ready for shipment. It is said that even were the secret of this composition discovered, nothing could be made out of it, as there are processes con-



Electro-Plating Dep't—Edison Phonograph Works.



Assembling and Testing Department—Edison Phonograph Works.



Battery of Screw Cutting Machines—Edison Phonograph Works.

nected with its manufacture of which Mr. Edison alone is cognizant.

The inspection department, where every piece and operation is inspected; the assembling and test room, where the machines are assembled and tested ready for shipment, and, finally, the packing and shipping-room, where a branch of the Erie Railroad runs its cars directly to the door.

There are four types of machines—the “M,” or battery motor machine; the “E,” to run from an incandescent electric light circuit; the “W,” or water motor machine, and the “T,” or treadle machine.

On the preceding page will be seen a view of the department in which are manufactured the planing tools and instruments especially designed for constructing

the phonograph. They are almost as marvelous as the phonograph itself, and of such delicacy that there are no duplicates in the world. These tools are made by that skillful engineer, Mr. George F. Ballou, and fully demonstrates the genius of the machinist.

The experiments that have been made by Mr. Edison in finding substances suitable for the inscribing stylus or the receptive cylinder of the phonograph would fill volumes with their detail.

On another page will be found a view of the shipping department of the Edison-Lalande battery, also manufactured at these works. Mr. Edison has accomplished much good in accumulators or secondary batteries, and has also set up many new forms of primary batteries, the



Engineering Department—Edison Phonograph Works.



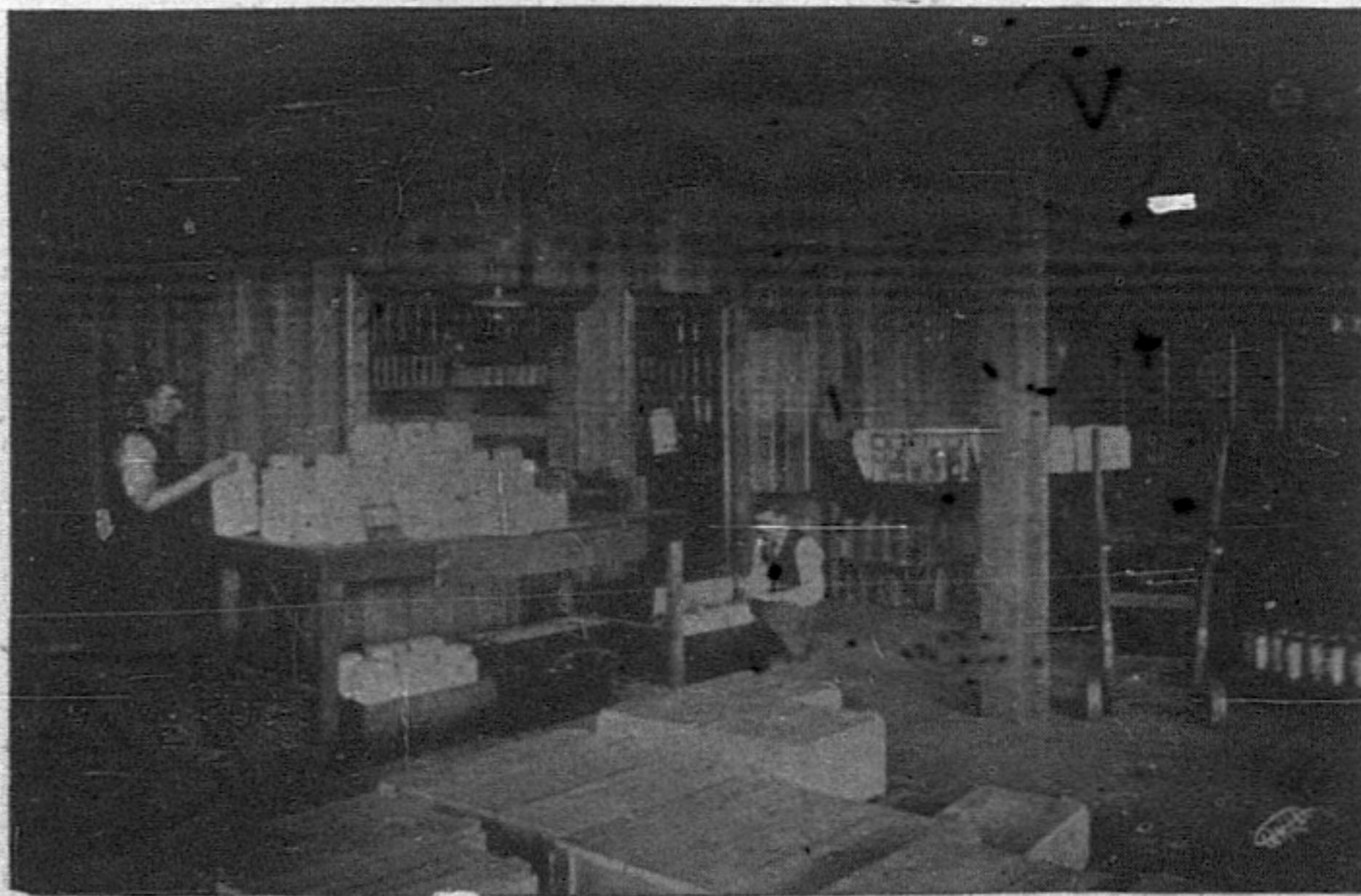
Phonograph Shipping Department—Edison Phonograph Works.

Lalande being the most prominent, securing, as it does, increased efficiency, and suitable, as it is, not only for the phonograph, but for every class of work in which battery power is available.

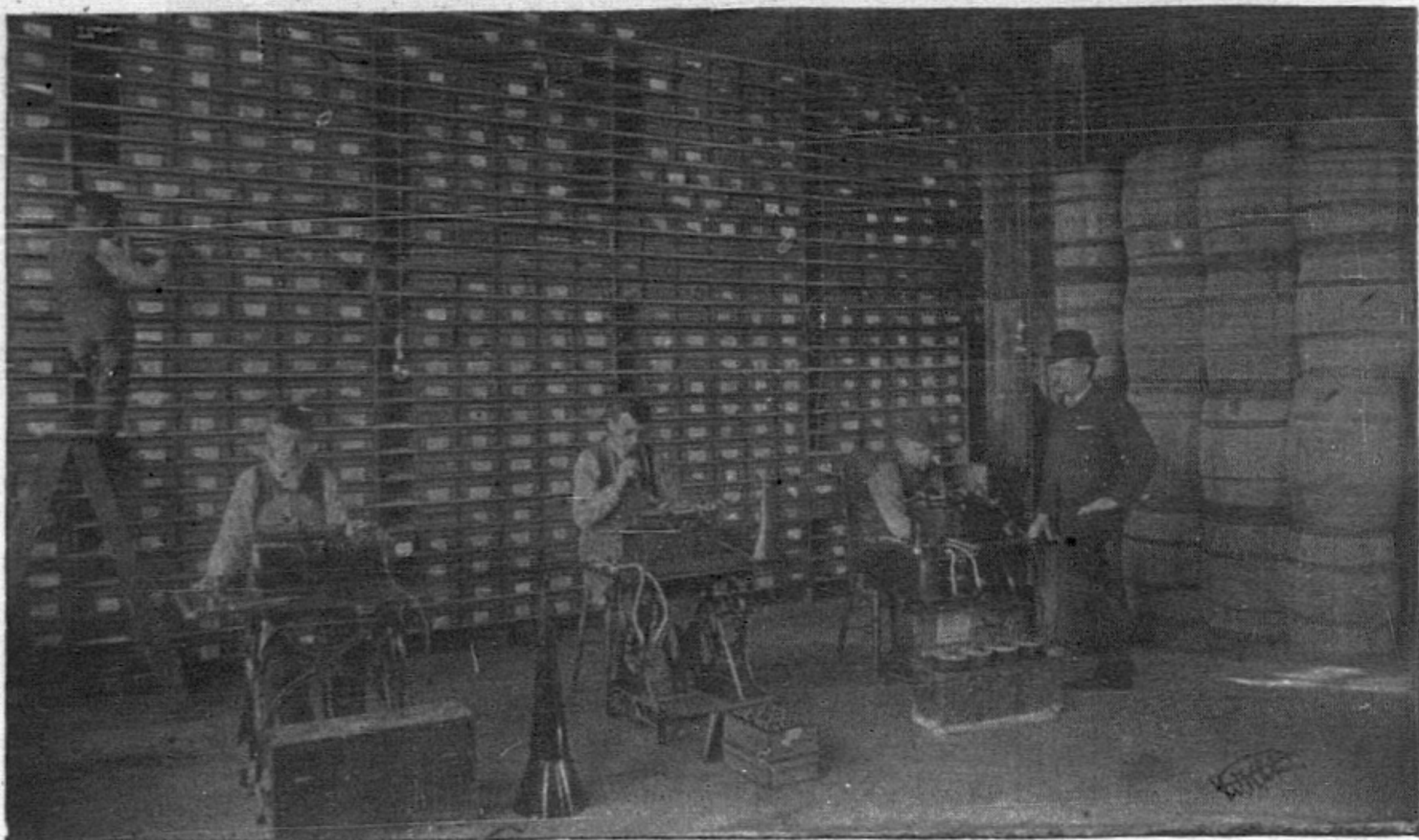
This battery has only been on the market a few years, but in that time the shipments amount to several thousand dollars per week.

Quoting the editor of the *Electrical*

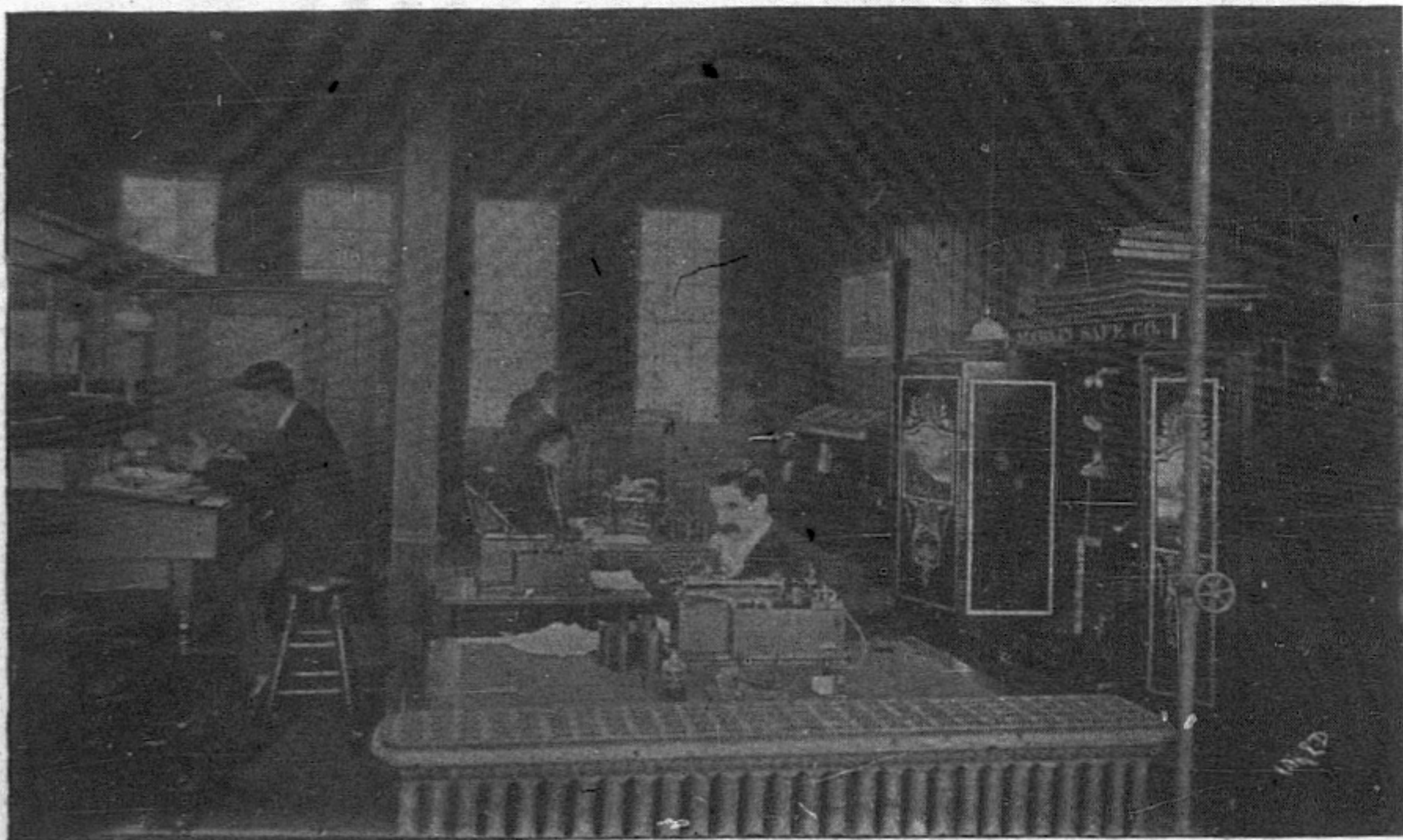
Engineer, we repeat "There is no finer piece of mechanism made than the phonograph. In the delicacy of some of its parts the watch does not compare with it." Yet it stands the test of daily use admirably and rarely gets out of order. At the Exposition in France in 1890, the perfected phonograph attracted as much attention as the Eiffel tower, and hundreds of eager visitors from every quarter



Shipping Department of Lalande Battery—Edison Phonograph Works.



Wax Cylinder Department—Edison Phonograph Works.

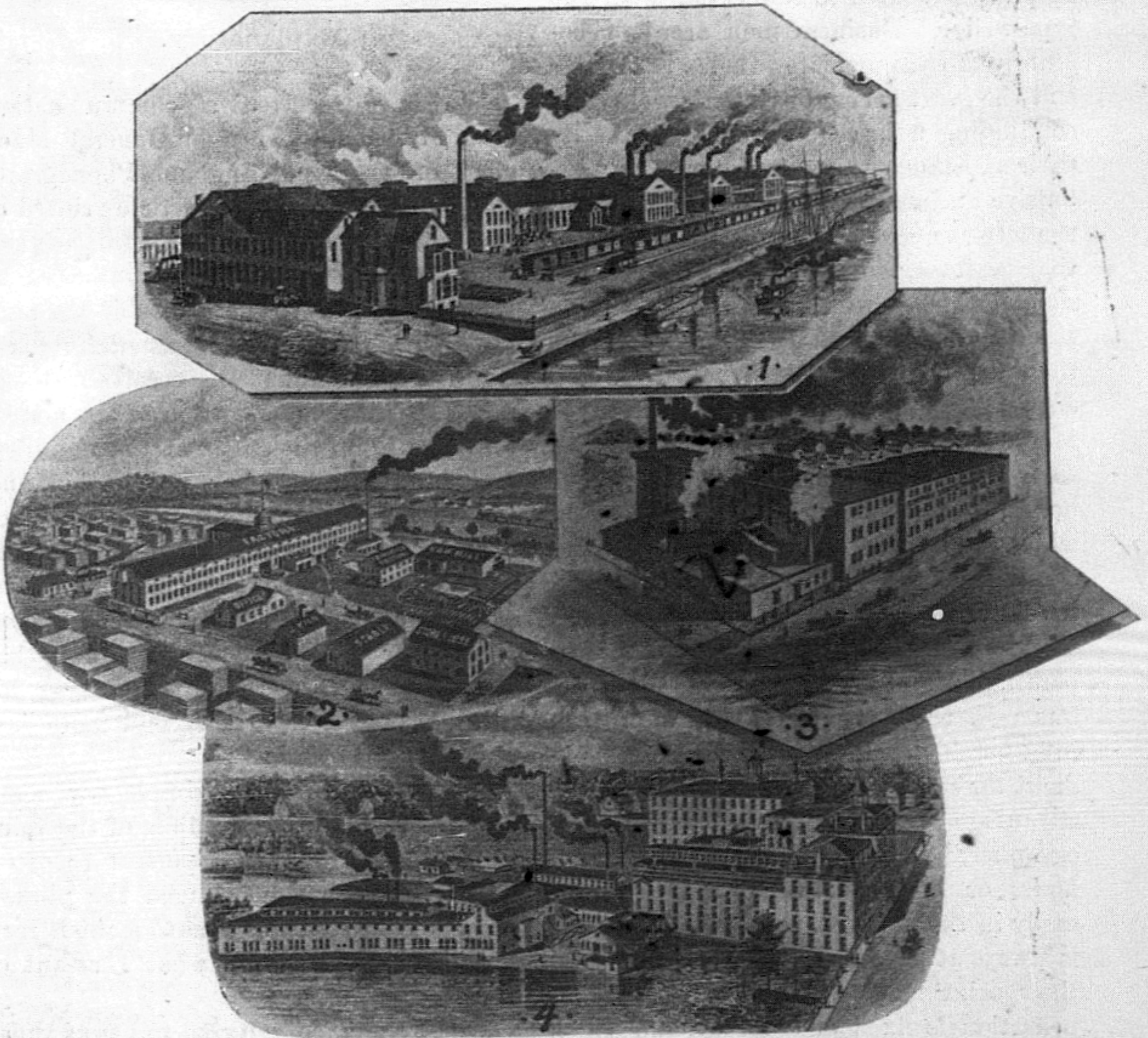


Office—Edison Phonograph Works.

of the globe made their way in quest to hear their own voices repeated. "Never before was such a collection of the languages of the whole world made. It was the first linguistic concourse since Babel times."

To conclude, we will remind our readers of a forecast made by Mr. Julian Hawthorne, who anticipated some years ago the revolution in business methods which has now taken place by the aid of the phonograph. He said: "In time the art

of speech will become a far finer and more accurate art than it has ever been heretofore. We can study it at our leisure from the phonograph; records will be ready in unlimited quantity to our hand. The voices of fathers, mothers, wives, brothers and children will speak to us in past years with all the living reality of the present moment. Century will converse with century. Let us invest in our phonographs with as little delay as may be." *The prediction is fulfilled.*



No. 1—P. H. Griffin Machine Works and New York Car Wheel Works.
 No. 2—W. T. Falconer Manufacturing Company and Empire Washing Machine Co.
 No. 3—Empire State Wagon Company.
 No. 4.—Gould's Manufacturing Company, Seneca Falls, N. Y.

The Utility of the Phonograph.

H. D. PULSIFER.

The rail and water-way systems, the financial and commercial establishments, the literary and electric activities of the present day, increase the wear and tear of life, and render the economy of both time and labor an absolute necessity. No methods or devices enable the heads of large enterprises or business interests to save labor and time, and to keep abreast of the world, so readily as the phonograph when used in connection with the type-writer. Business men are just beginning to appreciate their usefulness and the great saving of time they effect in conducting a large correspondence. By their assistance the proprietor of any extensive business can answer personally all the letters necessary for the conducting of that business, employing the exact expressions he wishes to use, and in an hour's time dictate the replies to more letters than he himself could write during the entire day. That is, he can dictate as much correspondence in one hour's time as a type-writer can transcribe in four hours, to say nothing of the time saved which was formerly needed by a stenographer to write his notes and then read them as he transcribed to a typewriter. To a business man who wishes to give his personal attention to every detail of his business, the advantages they afford are innumerable. Persons having employment for stenographers will appreciate the advantage of having a "mechanical stenographer," which neither wants lunch hours or holidays; which can work as easily in the dark as in the light; which is always at hand; which never interrupts the speaker nor loses a word; whose compensation is fixed once for all, and which never gets ill or weary. They will become indispensable in the offices of governments, courts, lawyers, clergymen,

architects, journalists, authors, scientists, and in many other lines of business. The illustrations on page 273 show some of the largest and most progressive establishments which are users of the phonograph through the Buffalo office of the New York Phonograph Company. They were the first to introduce the typewriter and telephone. That they have adopted the phonograph is the strongest evidence of its worth as an auxiliary to all offices where business is carried on after the most modern and time-saving methods.

Explanatory.

We have received a communication from Mr. A. N. Sampson, General Manager of the New England Phonograph Company, in regard to an article printed in the October number of *THE PHONOGRAM*. The article in question was intended to give his views as to the utility of the phonograph, and contained most sensible and useful matter, but it was received at our office after a greater portion of the material going to fill the pages of that number had been arranged for publication, and there was not room left for the whole of it. Therefore we curtailed it, giving what we supposed to be the most important points. It seems that Mr. Sampson considers our version incorrect. For that reason we take pleasure in stating his ideas, as copied from a second note just received. He says:

"I tried to give, in a simple way, some idea to the commercial public of the value of the phonograph as a perfect reporter, and unwittingly you changed the phraseology of one sentence so as to make it read entirely different from what I meant or said.

"The sentence referred to, runs thus: 'By its use a clerk will save a large portion of his time and labor, and what is more important, he will preserve his brain

from injury—an effect invariably produced by practicing stenography.’ THE PHONOGRAM mistakes my meaning. What I did say (I quote this from memory) was: ‘By its use a clerk will save a large portion of his time and labor, and also save much of the wear and tear on the brain, occasioned by the use of stenography,’ thereby meaning to imply that the use of the phonograph was preferable.

“The comments and flings in a communication from a stenographer received by me betrayed so much ignorance and injustice as well as rudeness that I shall not condescend to notice them; but I would like to have a plain statement of the whole matter made in my justification.”

This THE PHONOGRAM now gives, and hopes Mr. Sampson will be satisfied with the explanation.

Luminous Fountain at the Chateau of Craig-y-nos.

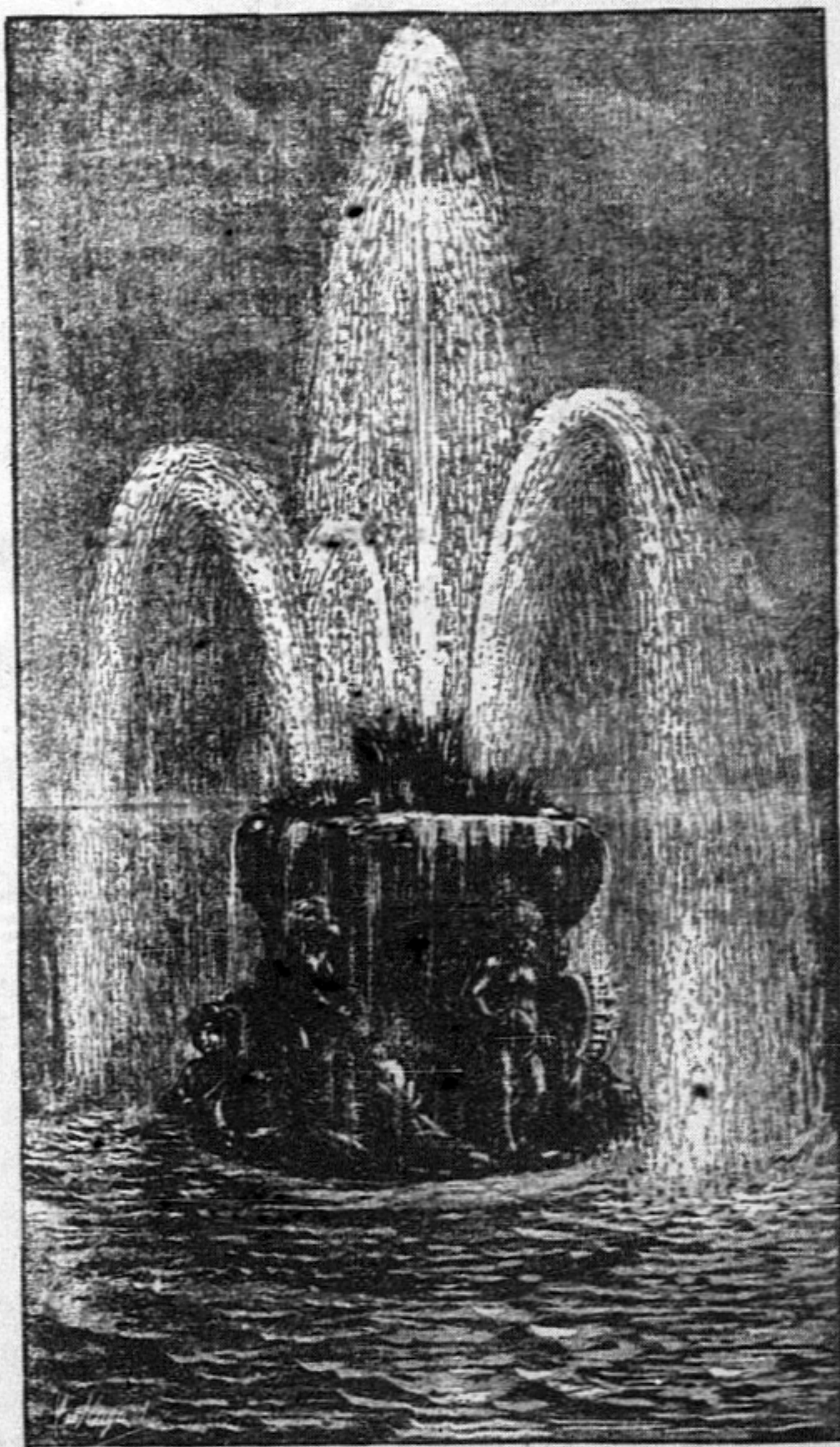
The representation of the elegant fountain constructed by Mr. Gustave Trouvè, of Paris, for Madame Patti Nicolini’s grounds surrounding her mansion in Wales accompanies this article.

The illumination of the jets of water is produced by means of electric lights, cunningly placed where they will create the appearance of streams of irradiated water, which is effected by the use of incandescent lamps. The dimensions of the jet d’eau are large; weight of fountain 20,000 pounds; diameter of basin about twenty-one feet.

The motor can be changed according to will. It may be hydraulic, with a clock movement, or it may be run with an electric motor.

Distribution of Milk Through Tubes.

A company in course of formation in New York proposes to distribute milk at dwellings by means of a system of special tubes. The milk from all the farms situated within a radius of fifty miles around the city will be delivered at a central station by means of a primary system of receiving tubes, and from that point it will be sent by powerful machines to the houses of consumers through a second system of outflowing channels or tubes.



Luminous Fountain at Craig-y-nos, Swansea, Wales.

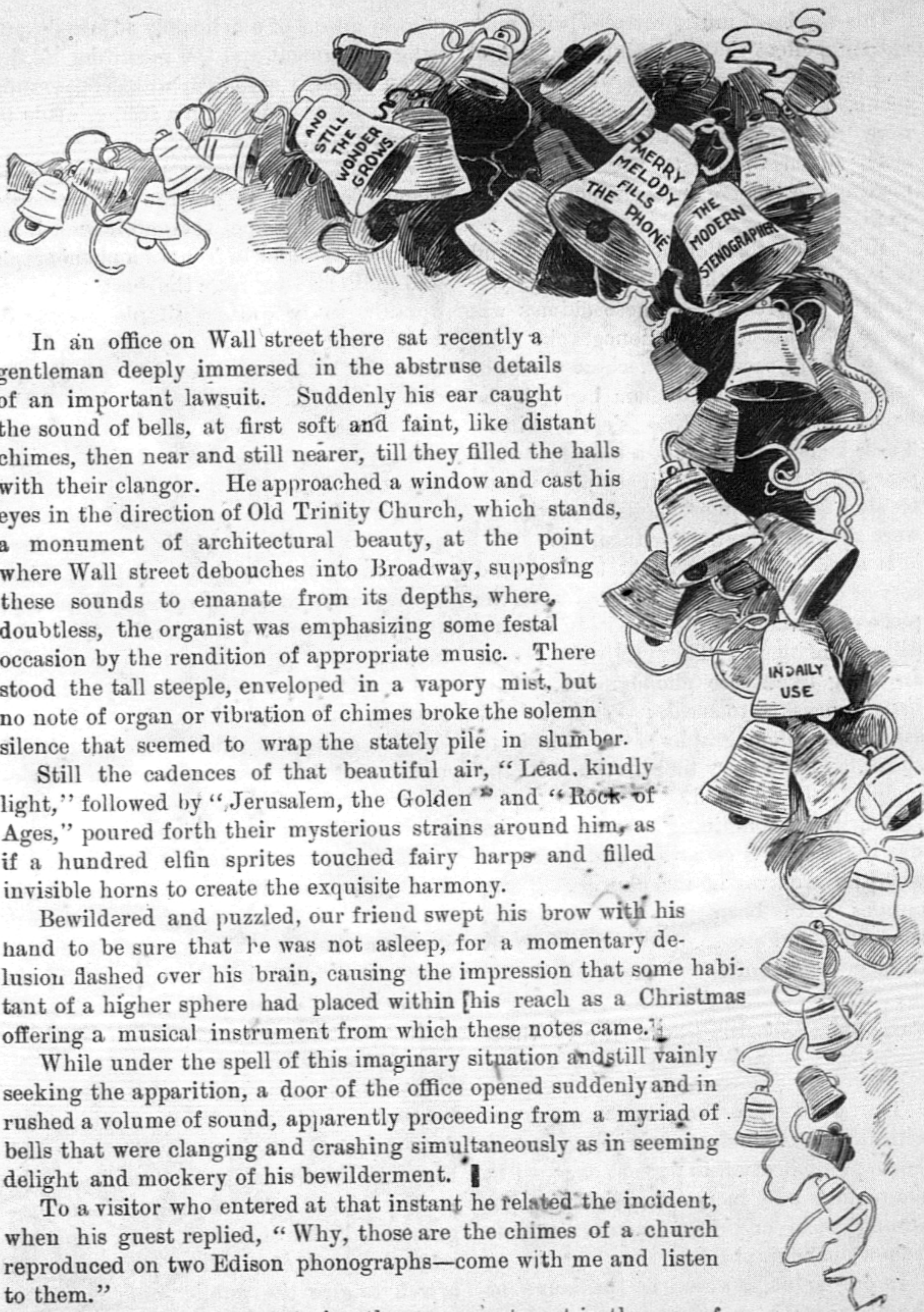


“Ring Out the Old, Ring in the New.”

The thoughts awakened at Christmas tide by the pealing of the bells seem always to well up in consonance with the sentiment uttered by angelic voices nineteen hundred years ago, proclaiming “Peace on earth, good will towards men,” and carry with them a sense of promises fulfilled and a realization of blessings bestowed.

But the sound of the New Year’s chimes ringing merrily out on the frosty air leaves an impression of gladness and pleasure. These paeans from the church belfries are the heralds of the young year which is to bring us happiness and prosperity. Innumerable tinklings salute the ear from every quarter; bells resound from scudding boats on the bay, there is iteration from tiny grelots adorning the necks of gaily caparisoned steeds, bearing their freight of happy people along avenues where the tidal-wave of humanity surges, and their silver tongues utter anthems of hope and reverberate in hallelujahs of praise.

The Edison phonograph, which is nothing if not a mimic, appears at this season with swelling throat and expanded ears, prepared to carry down to future ages the melody and the message of the bells.



In an office on Wall street there sat recently a gentleman deeply immersed in the abstruse details of an important lawsuit. Suddenly his ear caught the sound of bells, at first soft and faint, like distant chimes, then near and still nearer, till they filled the halls with their clangor. He approached a window and cast his eyes in the direction of Old Trinity Church, which stands, a monument of architectural beauty, at the point where Wall street debouches into Broadway, supposing these sounds to emanate from its depths, where, doubtless, the organist was emphasizing some festal occasion by the rendition of appropriate music. There stood the tall steeple, enveloped in a vapory mist, but no note of organ or vibration of chimes broke the solemn silence that seemed to wrap the stately pile in slumber.

Still the cadences of that beautiful air, "Lead, kindly light," followed by "Jerusalem, the Golden" and "Rock of Ages," poured forth their mysterious strains around him, as if a hundred elfin sprites touched fairy harps and filled invisible horns to create the exquisite harmony.

Bewildered and puzzled, our friend swept his brow with his hand to be sure that he was not asleep, for a momentary delusion flashed over his brain, causing the impression that some habitation of a higher sphere had placed within [his reach as a Christmas offering a musical instrument from which these notes came.]

While under the spell of this imaginary situation and still vainly seeking the apparition, a door of the office opened suddenly and in rushed a volume of sound, apparently proceeding from a myriad of bells that were clanging and crashing simultaneously as in seeming delight and mockery of his bewilderment. |

To a visitor who entered at that instant he related the incident, when his guest replied, "Why, those are the chimes of a church reproduced on two Edison phonographs—come with me and listen to them."

The two gentlemen entering then an apartment in the rear of the building, beheld two phonographs with "funnels" attached, pouring out in grand and sonorous tones to a delighted audience the chimes of the new year.

This species of music revealed, with more startling effect the recording qualities of the instrument than that of a harp or piano, because the funnels being of brass were resonant, and their trumpet-like shape added volume to the notes, while making no change in their accuracy or quality.

Here was a solution of the mystery, and the visitor stated that a few evenings previously the record of these chimes was made on this pair of phonographs from the bells of Grace Church, where a score of attendants had placed them beneath the belfry to take the New Year's chimes. These bells that rang out a welcome to the year 1893 took extraordinary precautions to sing in their most polished style, for were they not singing for futurity?

It must have been with at least a mild sort of curiosity that they looked upon the piece of mechanism placed within hearing distance of them. They had never seen anything like these phonographs. The bells were asked to speak; they spoke and sang; the phonographs were asked to speak, and the story told by the bells the phonographs repeated.

A cylinder containing one of the airs was inclosed in a cedar box and preserved with the archives of the church. These chimes have been perpetuated by the thousand, and are sold to the public by those in control of the phonograph.

Famous Record-Makers and their Work.

The word record-maker now carries with it a new significance, arising from its frequent application to persons engaged in the popular and lucrative industry of obtaining vocal and instrumental records from a phonograph.

In our country, which is the home of the phonograph, everyone knows that an impression can be made upon a wax cylin-

der by means of a delicately adjusted cutting instrument and the recording needle when properly actuated, will echo sounds directed into it through a funnel made to convey them.

And every one fancies that those whose occupation it is to prepare these records for the delectation of the public find it an easy task to stand in front of a phonograph and talk or sing into the horn; it also appears to be quite a simple matter to beat a drum, yet when the experiment is tried, in both instances, the results are disappointing, and a recollection of the old adage, "There is an art in everything," alone brings consolation to the untaught tyro.

Instruction and practice are both required to produce a good record-maker. One must learn how to modulate the voice, how to enunciate, what speed is necessary, at what angle the voice should strike the instrument. Otherwise the reproduction will consist of a confused medley of harsh, grating, unintelligible sounds.

The American public in search of amusement has been subjected to a variety of experiences in listening to the pastime provided it from this source. When exhibitors of the musical phonographs first undertook this species of entertainment, the average performance was not always a success. The reproduction was sometimes faint in tone, the subjects chosen were uninteresting or coarse, if consisting of recitations, and if musical, were often a burlesque on music.

Now all is changed. Performers are spurred on by witnessing the approval bestowed on meritorious exhibitions, and they take infinite pains to obtain not only perfect records, but a well chosen programme of amusements, both musical, recitative, and of a mixed character. It is well to give the public some points as to the merits of these artists.

The celebrated "Pat Brady" records,



Russell Hunting.
Edw. Issler

John C. Leach.
Geo. W. Johnson.

Edw. Clarence.

Leon Spencer.

George Schweinfest,

John Y. AtLee.

Thomas Bott.

Geo. J. Caskin.

Geo. A. Diamond.

W. F. Denny.
John P. Hogan.

Chas. A. Asbury.
Teddy Simonds.

manufactured by the Ohio Phonograph Co., have been used in all sections of the country from Boston to California and from Canada to New Orleans and Texas. The Ohio Company reports that orders for these records continue to come along in large numbers, and there seems to be no end to their popularity. They are made in Cincinnati, for the Ohio Company, by Dan Kelly, who spends a large portion of his time in taking these records. Mr. Kelly was formerly connected with some of the leading minstrel companies, such as Bryant's, Christy's and others when these companies were the great attractions in New York. He was also for some time the lecturer for McEvoy's Hibernicon, a panorama which traveled extensively through the country giving pictures of Ireland, and in this way became quite a fluent and popular speaker.

The great charm to these Pat Brady records is their naturalness of tone. The Irishmen that talk are real Irishmen, with the rich brogue and their Celtic way of saying things, and not an imitation of the genuine article. There have been many imitators of Mr. Kelly in his Pat Brady records, but none of them have been successful. The number of records disposed of by the Ohio Phonograph Co. up to date amounts to about five thousand.

Mr. W. F. Denny, who has been employed by the New England Phonograph Company for over a year, early developed a talent for popular music, and appeared first as a public singer at the Academy of Music, where he sang with great suc-

cess the then popular song "The Pretty Red Rose." Shortly thereafter he became a member of the "Quartette Club" of Philadelphia.

After the termination of Mr. Denny's contract with this company he began to "star," visiting all the best theatres and music halls in the country. Mr. Denny's voice is a tenor of pure tone and much pathos, and his articulation is extremely wonderful. As a vocal record maker it is claimed he has no equal in this country, and although his services have been sought by others, he has devoted his spare time entirely to the New England Phonograph Company.

Mr. John Y. Atlee continues to afford great pleasure by his rendering of music produced by artistic whistling. Mr. Russell Hunting offers highly dramatic representations, in which all phases of actual life are manifested, with the addition of imitations of railway whistles, bells, galloping of horses, and other sounds, brought to a wonderful degree of perfection. The list of all is too long to give in full, but among others we may mention Mr. John C. Leach, who imitates the Chinese; the Yankee, the English dude; Mr. Leon Spencer, whose repertoire embraces songs of all sorts, notably "Near It," from the comic opera entitled "The Pearl of Pekin." Mr. Geo. J. Gaskin, whose forte is pathetic songs, and Mr. Diamond, who introduces a variety; Mr. Hogan, Mr. Clarence, Mr. Asbury, and last though not least Mr. George W. Johnson, whose "Whistling Coon" has been heard in all climes, even in the wilds of Africa, must be heard in order to be appreciated.

We are indebted to the New Jersey Phonograph Company for the pictures of the most famous of these artists, which we herewith present to our readers.



The Telephotos.

This is an apparatus by which ships can hold communication with each other at sea, officers can direct their troops, or persons at a distance from each other be enabled to converse. It consists of a box about twenty-seven feet long, constructed in three sections, so that when not in use it may be reduced to a compact form, and within it are placed one hundred and six incandescent lamps. The box is made of aluminum, and built in telescope form so that it can be shut together. Each lamp is inclosed in a cylinder, with the front end fitted with magnifying glasses, thus making a very brilliant light. The instrument contains over 5,000 separate wires, and the electricity for lighting is generated by a dynamo propelled by an oil or naphtha engine.

The large number of lamps is required to regulate the spaces between the characters which form the different letters. The invention is an adaptation of electric lights to the Morse alphabet, and by pressing a button the lights flash up in dots and dashes easily read by an operator.

The letters C, R and S are all represented by three dots, the only difference being the spacing. The letter C is written two dots, space, dot. The letter R is written dot, space, two dots, while the letter S is designated by three dots. The dots are represented by two illuminated lamps, the spaces by twelve unilluminated lamps, and dashes by twelve illuminated lamps.

The wires and electrical connections are operated by a keyboard similar to that on a typewriter (only arranged in alphabetical order), by which one hundred and six incandescent lights are controlled and made to produce the signs of the Morse telegraphic alphabet. The inventor claims that incandescent lamps of thirty-two candle power can be distinguished at sea at a distance of from ten to fifteen miles.

With stronger lights the characters are discernible at a greater distance.

Many futile attempts have been made to devise some means of intelligent conversation between vessels at sea, but the only other practical system, which was invented by a Frenchman, is said by persons familiar with it to pale into insignificance when compared with this, which is the invention of Mr. Claudius V. Boughton, of Buffalo, New York.

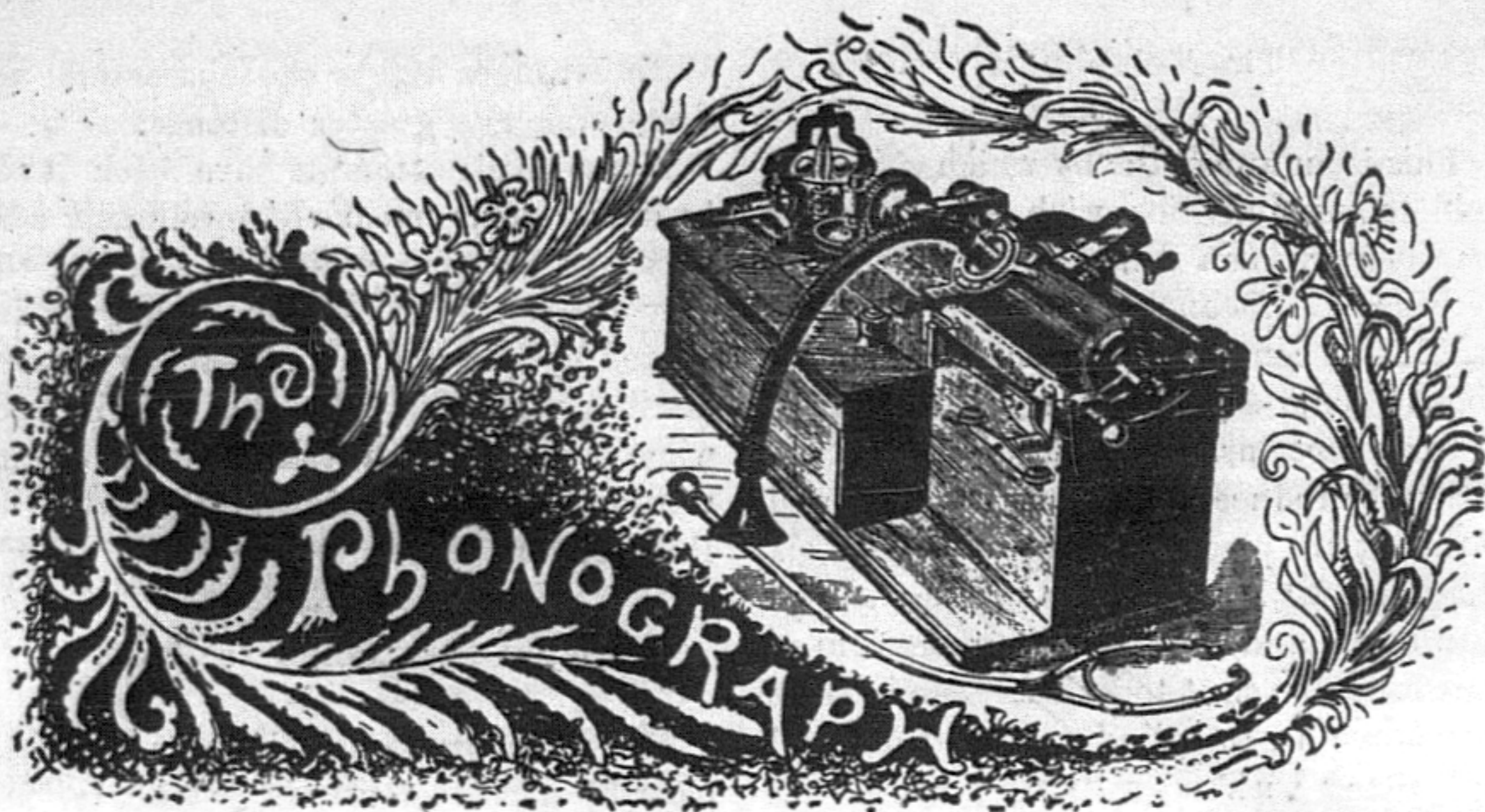
What Has Come to Pass.

The phonograph has become as indispensable as the telephone. Stenographers concede that this instrument is their friend and ally; alert business men volunteer their testimonials to its utility; orators discourse eloquence into its throat, to be dispensed on occasion or preserved for future use; professors of languages make it a medium for the instruction of pupils, because the exceeding delicacy of its construction qualifies it to render the pronunciation of foreign words accurately; preachers pour out their sermons, fraught with the impressive admonitions which their personality inspires, into the receptacle, where they are caught and held as the sun catches an image and stamps it on a metallic plate; and even the dainty society woman has at last bestowed a modicum of praise on the wonderful little instrument which but a few years ago lay dormant in the brain of Thomas A. Edison.

An Eiffel Tower in London.

At London a society has recently been formed for the construction of an Eiffel tower (Metropolitan Tower Construction Co.), and with this object has purchased a vast extent of land in Wembley Park.

The expense of this construction is estimated at five million francs.



A MAGAZINE devoted to all interests connected with the recording of sound, the reproduction and preservation of speech, the Telephone, the Typewriter, and the progress of Electricity.

PUBLISHED MONTHLY.

TERMS:

ONE YEAR,	\$1.00
SINGLE NUMBERS,	.10

Postage Prepaid.

V. H. McRAE, Manager,
Pulitzer Building, Room 87. NEW YORK.

ADVERTISEMENTS.

THE PHONOGRAM, having special facilities in its circulation through the vast commercial system occupied by the Phonograph, Telephone, and other Electrical Devices, presents an exceptionally valuable advertising medium. The rates are reasonable and will be furnished on application.

CORRESPONDENCE

relating to the Phonograph, Typewriter, or Electricity, in any of their practical applications, is cordially invited, and the coöperation of all electrical thinkers and workers earnestly desired. Clear, concise, well-written articles are especially welcome; and communications, views, news items, local newspaper clippings, or any information likely to interest electricians, will be thankfully received and cheerfully acknowledged.

Our Second Anniversary.

The dawn of the New Year marks the second anniversary of THE PHONOGRAM, and the occasion suggests a review of the career of this magazine. The enterprise was an experiment; as uncertain in its consequences as the attempts to reach the north pole. But like that mysterious spot, the phonograph had a sort of property of inspiring faith in its individuality, and when once used always invited its devotees to unflagging service.

THE PHONOGRAM appeared on the 1st of Jan-

uary, 1891, as the champion of an invention heralded by its originator as a creation possessed of extraordinary qualities, and with whose development there would spring into existence results of great benefit to man. This little instrument, evolved in the silent watches of the night from the brain of a giant, came forth at first timidly and with faltering steps, and those who had it in keeping indulged only the idea of rendering it a source of amusement to the music-loving world. It was arranged that cylinders producing orchestral music, or the soft notes of skilled flutists, or the sweet refrains of harp and piano, should, through the agency of this wonderful toy, afford entertainment to the multitude.

But meantime the infant prodigy, cramped by the bands that swathed it and impatient under a confinement to so limited a sphere, leaped forth from its bounds, and with the impetuosity born of confidence in its powers, challenged in grand and eloquent accents the business world to find an amanuensis who could surpass it in celerity, accuracy and reliability.

Pitting itself against the grand army of stenographers, men whose life-service had been given to perpetuating the wisdom of their fellow-men, this mechanical clerk, as it were, aroused the hostility of the world by the arrogance of its claims, and people stood with bated breath to witness the quelling of its audacity. It is now unnecessary to say that such a crisis never occurred.

At this juncture THE PHONOGRAM, its appreciative and unswerving friend, came forward with outstretched arm and ready pen to espouse

its cause and ring out its praises to a wondering but doubtful public.

THE PHONOGRAM saw with prophetic vision the future that loomed up before it, and at once took the stand that it should be widely and strongly recommended to the public as worthy of patronage, from a *utilitarian* point of view. Considered under this aspect, it met with a resistance almost insuperable. As fast as objections to it were raised and demolished, new accusations and aspersions were heaped upon it. Nothing daunted, THE PHONOGRAM wrote and published and scattered to the four corners of the earth all the evidences of its superiority.

Comprehending quickly the value of the machine, THE PHONOGRAM first pointed out to the world the necessity of enlisting the services of the typewriter, and that the latter was the complement of the former; at the same time declaring its confidence in the policy of making arrangements with typewriter manufacturers to vend the two machines together. Following the instructions of those in authority, it advocated the policy of selling the instrument without restrictions, knowing that whatever tends to alleviate the labor of man, no matter what barriers may be raised against it, is sure to find adoption in the end. THE PHONOGRAM also commended the policy of mapping out limits to certain agents for sales, and of urging a thorough canvass of each area, and then holding every agent strictly responsible for his course.

It described and illustrated the different parts of the machine embodying all details, and regardless of expense.

This statement of facts, easily corroborated by reference to the files of the magazine, goes to demonstrate that its labors have not been unfruitful, nor its work perfunctory; but that it has made "bona fide" endeavors to serve the cause. We have only to add at present that THE PHONOGRAM stands ready to preserve in all possible ways the autonomy of the Phonographic Association.

Essential for a Good Typewriter.

To be a good typewriter operator, one must learn the uses of all the component parts of the instrument and how to rectify any of the accidents that are likely to occur.

Persons not residing within easy reach of an inspector must learn how to perform many duties in keeping the mechanism in proper form which it is indispensable to know *how* to do and especially must the instrument be maintained in good and clean condition.

Important Changes.

THE UNRESTRICTED SALE OF PHONOGRAPHS.

Although the preceding article furnishes a résumé of the most prominent facts in the history of the phonograph and its organ, THE PHONOGRAM, we trust our readers will patiently follow us while we lay before them certain accompanying circumstances not generally known to the public, about which those who use and those who sell this instrument should be informed.

The inventor of the phonograph early foreshadowed the wide range of its powers and the ever expanding field of its possibilities; but many of those who exploited it satisfied themselves with showing it in one light only—that of a reproducer of music. This quality made it attractive to a class of patrons so accessible and easy to please that it yielded ready and large profits, and it soon became widely known.

But the theatre of its greater triumphs was not the concert hall, nor the hotel corridor, nor the exhibition parlor. The phonograph was constructed to be man's help-mate, and the reason of the delay that occurred in its adoption as a mechanical amanuensis was on account of the difficulty in bringing the people to learn how to use it. Simple as it is, and easy to manipulate, they became impatient under the training process, and were especially annoyed when warned that it must be handled with care.

At this point The North American Co. clearly perceived the impediment that hindered advance, and advised the sale of phonographs, stating that a rental system would retard its progress, because whatever people own they take care of, and *take pains to make profitable*, all of which THE PHONOGRAM published and emphasized and circulated in all sections. By reason of this continued repetition and advice, a new light began to dawn on the minds of the people, and they realized that it was something more than a scientific toy or dispenser of amusement.

After a conference with its agents the whole system was reorganized. The North American Co. took the business in hand, appointed agents in large cities to sell the machine on the same line as the typewriter, and adopted the general sale system. Mr. Edison was elected president, Mr. A. O. Tate vice-president and Mr. T. R. Lombard general manager.

THE PHONOGRAM meantime pursued the same course unflinchingly, and proclaimed the fact that there was no cause for a panic among stenog-

raphers; for though sales of phonographs had greatly increased, stenography would always hold its own, running on parallel lines with this instrument. Thereupon leading reporters recognized this as truth, and the intelligent portion of the craft also yielded their adhesion.

And now in this good year 1893 we echo the sentiment of the practical men of the country, who write us saying: "The capacity of the phonograph is only measured by the dexterity and endurance of the operator."

We take this occasion to thank those who have indorsed us. THE PHONOGRAM rejoices that all who are interested in this work have come to conclusions so wise. We have pushed on vigorously through good and evil report, carrying out the idea which to us has been a talisman—to *make the phonograph the mechanical reporter for all succeeding ages*. And here let us ask, how long would it have taken to convince the multitude on whom these principles have now been so thoroughly impressed without the aid of the THE PHONOGRAM? We answer, probably ten years, as it did with the typewriter. It is proven by the vote of thanks offered in the Chicago Conventions that our labors have been appreciated—as well as by the fact that now full credence is given to our opinions on such matters by the whole fraternity. In closing, we reiterate that we possess a mechanical stenographer whose mission cannot be questioned, whose vantage ground has been retained, and whose future reveals a vision of the promised land. Henceforth the motto of the talking machine is "*Semper paratus*."

Numerous and Various Changes Wrought by the Phonograph.

Dr. Heinrich Noe says: "By far the greater part of educated men go on day after day slowly *painting the signs* of their thoughts exactly as the contemporaries of Homer did. There is a most astonishing contrast between the rapidity with which we communicate our thoughts to another in speech, and the long, wearisome process by which we set them down for our own use. Our deliberate formation of letter upon letter out of the alphabet is an anachronism utterly out of keeping with the progress we have made in all other branches of human knowledge and action."

A piece of mechanism has recently been produced that has already revolutionized business methods.

There is no longer any reason to deplore the laborious processes by which man expresses his thoughts. The phonograph as well as the telephone aid in this important work.

We chronicle a phase of the new mode, not always known or noted in business circles. The head of a firm enters his office and reads the vast accumulation of letters standing ready for inspection. After due reflection he dictates his answers to each into the silent machine. When this duty is done he may leave the office and cross the continent without further anxiety as to that part of the business; for his amanuensis will copy and mail them with alacrity.

But there is even a speedier method of conducting the affair. These very cylinders upon which the words of the head of the firm were recorded may be placed in boxes manufactured for the purpose and the whole volume of correspondence expedited without delay. Writing will become less of a necessity when the phonograph becomes more widely introduced, and the time is not distant when the pen will be relegated to a place in history alongside of the stylus and other obsolete appliances.

Your Business.

One method of increasing your business is by using a phonograph.

If you are *true to yourself*, you will employ such means as conduce to labor saving, tax your nerves least and make life less arduous. All this the phonograph accomplishes. With this instrument at your right hand as the representative of aid and comfort, no obstacle will appear insuperable. If you desire to maintain serenity, be at peace with the world and reach the acme of success in your business, try a phonograph. We will guarantee good results.

Has It Ever Occurred To You?

To those who make daily use of the phonograph, either for office or exhibition purposes, we desire to say, that your experiences would be of great interest to the readers of THE PHONOGRAM and that contributions of this nature or the criticisms of others will be gladly received and appreciated.

And we further desire to state that efforts of this kind are not in reality gratuitous aid to this magazine, as casual consideration might make it appear; but each observation and useful sugges-

tion advanced by those who use the machine will make a return to all who read THE PHONOGRAM, and out of this progress in research some new facts are sure to be elicited, some new truths to result.

We would like to hear from the practical phonograph men upon the following points :

1st. What power for running the phonograph do you prefer ?

2d. How does the public receive it at present ?

3d. What profession, occupation, calling or class among the people use it most ?

4th. What is the relative cost of a stenographer and the phonograph ?

5th. Where and how can it be made most popular ?

We have given you a wide margin—kindly fill in and let us hear from you in time for our next issue.

To Exhibitors, Users, and Intending Purchasers of the Phonograph.

At the beginning of the present year we wish to call the attention of persons included in the above category to the advantages offered them by this publication. Those already engaged in the business will find here information either as to new fields for the introduction of the machine, or for guiding their selection in purchasing, or for the care and operation of it, or for its application to yet untried purposes. There is always some novel idea regarding it in our columns.

This is essentially a *trade journal*, devoted to the interests of those who exploit the phonograph, and in this connection we would remind such of our readers as conduct that business, that when an enterprise of this sort is inaugurated it carries with it an *obligation*, and they stand in their own light in withholding their patronage.

If you are not a subscriber send for a sample copy, if you are, send us a name or names of those who would appreciate a wide-a-wake journal in the interest of its title.

Golightly.—The man that takes hold of a live wire is apt to experience a set-back.

Gohard.—You mean the feeling is one of revolt.

* * *

A good thing at little expense. THE PHONOGRAM for a whole year for one dollar. Now is the time to send in your subscription.

The Phonograph in the South.

The Georgia and Florida Phonograph Co. have joined with the North American Co. in selling phonographs without restrictions. Mr. F. Wohlgemuth has been appointed exclusive agent for the sale of the phonograph in this territory, and looks forward to an extensive demand for machines as soon as the fact becomes known that they are for sale. New offices have been opened in Atlanta, and everything has been arranged to carry on the business in an efficient manner. The storage batteries will be generally used in this territory, and Mr. Wohlgemuth has fitted up one of the latest "Motor-Dynamos" or direct current transformers for recharging storage batteries. This gives perfect satisfaction. It is kept running day and night when pressure of business requires, a complete arrangement of automatic cut-outs giving security against accidents. Mr. Wohlgemuth says, "I claim to have completely overcome this hitherto troublesome and perplexing question, and charge my batteries at a minimum cost."

The Growing Popularity of the Phonograph.

The letter on the following page received by Mr. John Y. Atlee, has been turned over to THE PHONOGRAM for publication. It comes from the celebrated boy pianist, Josef Hofmann, and was written in response to a communication accompanying a gift of whistling records sent him by the famous whistling artist.

This second Mozart is still at Berlin, studying under the great master, Rubenstein. When he shall have come to man's estate, and reached the acme of physical and mental force, the result of this training and the development of that wonderful combination, or, more accurately speaking, that perfecting of the play of thought which a musical genius attains, will then be expressed by his compositions, and the world will profit by these outpourings of his soul.

To his home in Berlin, the great lights of this musical community resort, and Madame Sembrich, Paderewski, the

brothers De Reszke, and scores of other celebrities are drawn towards it as by a magnet. For the father and the son are both famous and not only attract continental observation, but awaken the attention of persons from distant lands—the inhabitants of the British Isles, the visitants from trans-Atlantic shores, and even the far-off children of Oriental climes and dwellers on the Pacific main.

Phunnygraphics.

HE CALLED THE TURN.

Quidnunc.—What do you mean by an electro-cutionist?

Quipton.—Why he's one of those elocutionists that electrifies the audience.

OH! WHAT A SURPRISE.

Ketchon.—When Knewitall mistook the galvanic machine for the strength-tester and pulled it out to its full force he must have been startled.

Gattetheyre.—“Startled” don't describe it. Egad, sir, he was shocked!

A MISTAKEN CONCEPTION.

Mrs. O'Flaherty.—(*Contemplating the nickel-in-the-slot phonograph.*)—Arrah, murtha Patrick, phwat the divil's that?

Mr. O'Flaherty.—Sure, Bridget, that's the phoneygraph.

Mrs. O'Flaherty.—Pho-nay-graph is it? And phwat do it do standing there wid a rubber hose and a glass case loike an ay-quay-rium?

Mr. O'Flaherty.—Faith and its the woonder av the age. It's the talkin machine.

Mrs. O'Flaherty.—G'lang wid yer now. Talkin is it? And phwat does it say?

Mr. O'Flaherty.—Sure if ye drap a nickel-in-the-slot there's nothing they'll not do for you!

Mrs. O'Flaherty.—And has it a voice to it?

Mr. O'Flaherty.—Whist, Bridget! Don't expose yer ignorance. Oi'll drap foive cents in the slot, ye put the spakeing tube to yer ears and—be hevvin's—y'll hear yer correct weight.

The phonogram is essentially a magazine of current literature.

Schandau 14 Aug. 92

My dear Sir,

Very Kind of you to have sent me three copies of your Phonogram and three musical records. Being in Schandau near Dresden for my Summer-vacations, I could not hear yet the records on my phonograph. As to the essay in your Phonogram about my phonograph, I have only to correct, that I am a pupil of Rubinstein since the month of May and endeavor to enter into all secrets of this greatest piano-player. In two years I hope to visit America again and to present myself as a accomplished artist. Meanwhile if you wish to possess a little piece played to the phonograph I will send it to you. My phonograph is with a water-motor and because we change now our lodging, I was obliged to order an electric motor of german construction

not being sure whether
it will work well. —

(You know the Edison's
electric motor is not allowed
to be imitated). My new
lodging from the first
of October is: Berlin W.
Winterfeldstr. 11 Once
more many thanks and
if you wish a musical
record, please let me know.

Yours very sincerely

Josef Hofmann

Excuse all mistakes — you
know I am a Pole by birth.

Phono Chat.

Mr. John Y. AtLee recently gave an exhibition of the Edison phonograph at the Ryland M. E. Church, Washington, D. C. Mr. AtLee prefaced his introduction of the phonograph by explanatory remarks upon its uses, after which he gave selections, both instrumental and vocal, from celebrated operas, and also his own wonderful whistling through the phonograph. The audience were greatly entertained. Mr. AtLee has the happy faculty of rendering these phonograph exhibitions extremely interesting by the painstaking manner in which he describes and illustrates each part of its mechanism. In order to convince the credulous that there is no mystery connected with the reproduction of the voice, as is often attributed to the phonograph by persons who have never seen it, he invites the minister or some member of the audience to come forward and speak into the tubes, and then reproduces through the large funnel all that has been said. Skeptics are convinced that this is no "Punch and Judy affair, with a boy concealed in a box," but the utterances of a mechanical wonder.

The Missouri Phonograph Co. are selling many

phonographs. They have very live agents. Mr. Emil Ludwigs, who operates in one county, has gotten out a valuable set of instructions.

The Pittsburgh Typewriter Co. located at Nos. 214-215 Ferguson Block, Pittsburgh, Pa., are now the selling agents for the phonograph in the territory belonging to the Western Pennsylvania Phonograph Co. Mr. Henry F. Gilg, formerly manager of the Western Pennsylvania Co., is manager of the new company. Mr. Gilg is a gentleman of great energy and tact. He has been agent for the Densmore typewriter during the past year, and will now advance the interests of the phonograph along with those of the former machine. Already many phonographs are being used in Pittsburgh and the larger towns adjacent, and there is no reason why hundreds should not be sold, now that all restrictions have been removed.

Mr. R. T. Haines, of the New York Phonograph Co., is constantly making delightful additions to the collection of phonograph records which are for sale at the offices of this company. We listened recently with much pleasure to a song, with piano accompaniment, sung by Mr. Edward Clarence, entitled "Major Hawkins," and "My Sweetheart is the Man in the Moon," as sung by Mr. George J. Gaskin.

Every well-appointed house now has, besides its ball room, music-room and billiard-room, a phonograph parlor, used exclusively for phonograph exhibitions. So says a prominent architect.

Miss Lillie Letters, the bright young amanuensis of the Pittsburgh Typewriter Co., wins from her employers high commendation as to her qualifications in typewriting and work on the phonograph. Though she has devoted but a short pace of time to acquiring the art of using these two instruments, she is said to be so expert that she is able to compete with any stenographer in the country as regards speed, accuracy and neatness. She transcribes all letters and miscellaneous matter from the Edison phonograph.

By the way, why not get up speed contests between the phonograph operator and the stenographer? It would be interesting to learn the exact result.

Mr. John Y. AtLee, the famous whistler, for many years with the Columbia Phonograph Co., has severed his connection with this company and has arranged to make records with the North American Co.

Mr. Charles Henri, of Brooklyn, is building an annex to his pretty home for exhibiting the phonograph. He will issue invitations to attend a phonograph party. The feature of the entertainment will consist of recitations, interspersed with music and songs. Leading elocutionists will recite favorite selections into the instrument, which will be repeated to the audience by means of large funnels. The guests will wind up the occasion by "tripping the light fantastic" to strains of music heard through the phonograph. These functions will be very *récherché* and a pleasant innovation. In future "phonograph parties" will be all the rage.

Authors and Publishers.

The *Revue Scientifique* brings to us for the month of December its accustomed quota of valuable information, including the communications of distinguished men of letters from various parts of the world, and reports of new discoveries in many sciences, as well as intelligence of a general character, enabling us to keep pace with the progress of the world. This magazine is ever *le bien venu*.

The *Woman's Illustrated World* is a weekly journal published by Mr. R. E. Avery, and edited by Mrs. A. F. Scott, a lady well-known in literary circles here. It contains a tale from the pen of Jules Verne, and information relating to the world's industries, art, science, and indeed almost every subject of interest to the human race.

Miss Julia Corson's contribution is rendered particularly attractive by her description of the Mexican tree upon which the chocolate bean grows; and the article on weights and measures is most appropriate. We trust in his next installment this author will give some idea of the exact length of the metre.

The Kindergarten Association directing its efforts towards the improvement of childhood and intended for the purpose of supplying to the middle and poorer classes of the inhabitants of this country, a training and education that will put them in condition to receive with advantage fuller courses of learning in later years has now attained a large growth. The classes for teachers show what the system and those sustaining it have accomplished: last year a thousand teachers were graduated. The Kindergarten Directory published by the Kindergarten News Co., furnishes information to all who desire it.

The *Ladies' Home Journal* is deservedly popu-

lar because it gives special consideration (through its different departments) to all that can touch the welfare and interests of woman. Edited in a city which has, from its foundation, aspired to be a center of learning and is by reason of its strain of Quaker thought and tradition fitted to sustain the calm and pure standard of manners and sentiment so becoming to the feminine portion of humanity, it assists its patrons to stamp upon the minds of its readers qualities of inestimable value to the race and to the country.

A Sample Letter.

FOSTER & FREEMAN, Counselors in Patent Causes, 931 F Street.

WASHINGTON, D. C., November 14, 1892.

COLUMBIA PHONOGRAPH COMPANY.

DEAR SIR:—I have had two of your machines in operation at the office of my firm for over a year, during which time they have proved to be equally serviceable for dictation of correspondence, reports, specifications, and descriptions of machinery, briefs for arguments, and for memoranda and instructions to be left for my clerks in my absence.

During the time that I have had the machines they have cost nothing for repairs, either in time or money, and there has been no difficulty whatever in operating them either by myself or my clerks. One of the machines is run by a secondary battery and the other by the electric light current and they operate equally well. The dictating machine is arranged directly in front of me in my desk so that it is available for use at any moment, and I can dictate my memoranda or correspondence, or whatever it may be without depending upon the presence or efficiency of a clerk. This has proved to be of almost incalculable advantage inasmuch as I am enabled to make use of odd moments which otherwise would be wasted, and transact a great deal of work at times when my clerks could not be present. I can also dictate with much greater rapidity than would be practicable except with the services of a most expert stenographer. The machines have become just as regular a part of the business appliances as the typewriters. I have not had the slightest hesitancy whenever opportunity offered of recommending their adoption.

Yours truly,

CHARLES E. FOSTER.

Reading Notices.

The Caligraph which is a useful ally to the phonograph, climbs the ladder of development step by step, always reaching out towards perfection, and with the latest improvement which is the ivory key-board, outruns many competitors in the race towards that goal. The key-tops are made of mineral ivory, a mixture of ground minerals and gums, subjected to intense heat. The letter and body of the key are moulded together while in a plastic state around the bushing which firmly holds the stem.

This machine is now admirably adapted to easy manipulation.

A Boston concern has ordered from the manufacturers, five hundred new Bar-lock typewriters.

The new machine has many excellent improvements. The carriage is made almost entirely of aluminium, thereby increasing its lightness. A paper guide is placed just back of it, enabling the writer to have his printing in full view without

craning the neck, and the body of the typewriter being lowered about two inches, enables one to see the type as it is printed. Many other improvements have been made which we will speak of anon.

"Tried and *not* found wanting," is the verdict of all patrons of Jno. Underwood & Co., 80 Vesey street, in typewriter's supplies.

Geo. A. Hill, at the Typewriter's Exchange, 10 Barclay street, is a "low tariff" man in prices of typewriters.

Personals.

Mr. H. D. Pulsifer is the western agent of the New York Phonograph Co., and rents phonographs in the counties of Erie, Niagara, Orleans, Genesee, Wyoming, Cattaraugus and Chatauqua. His offices are at 230 Pearl street, Buffalo, N. Y.

Mr. H. K. Seaver has been exhibiting the phonograph to large and appreciative audiences in Webster, Mass.

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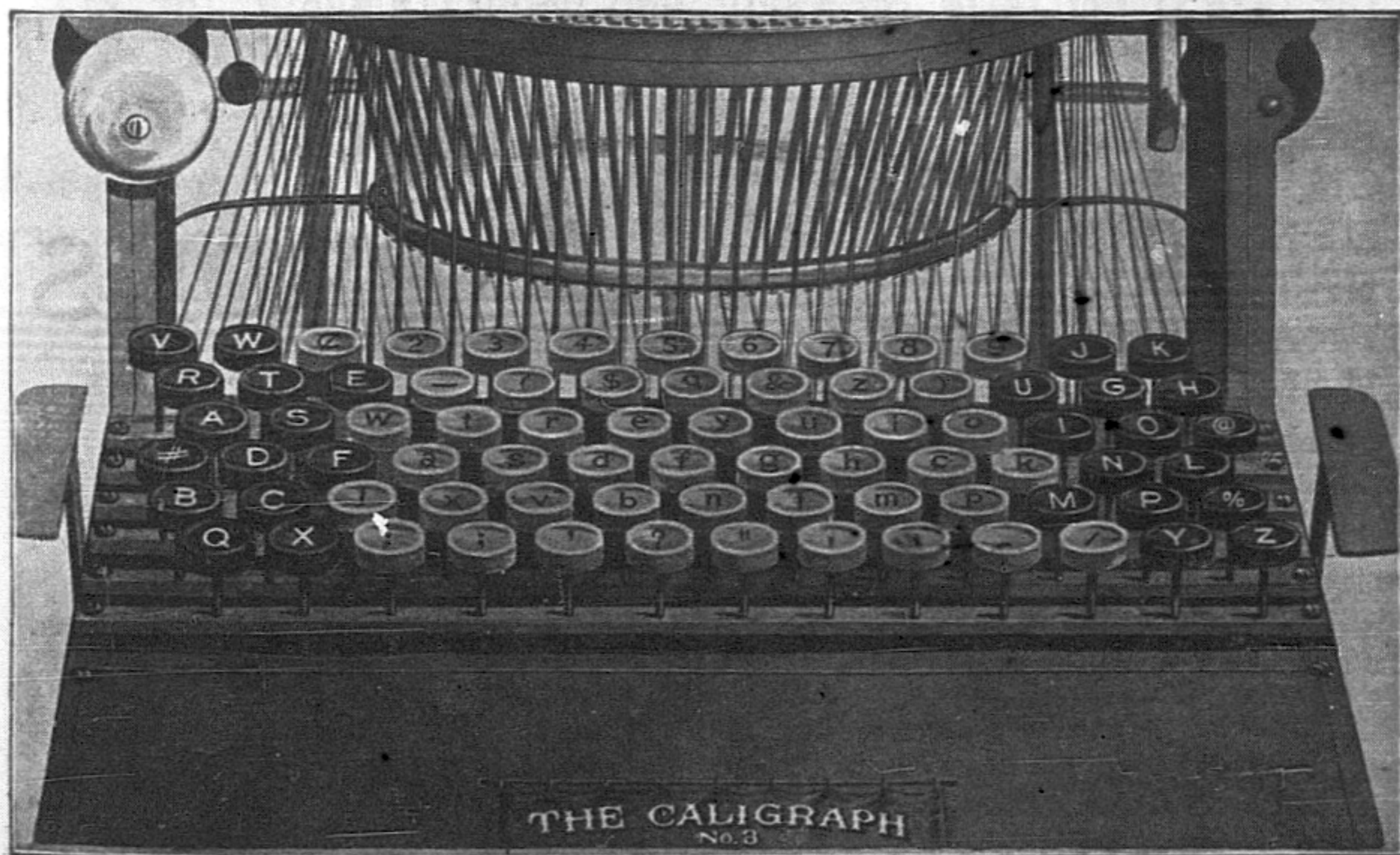
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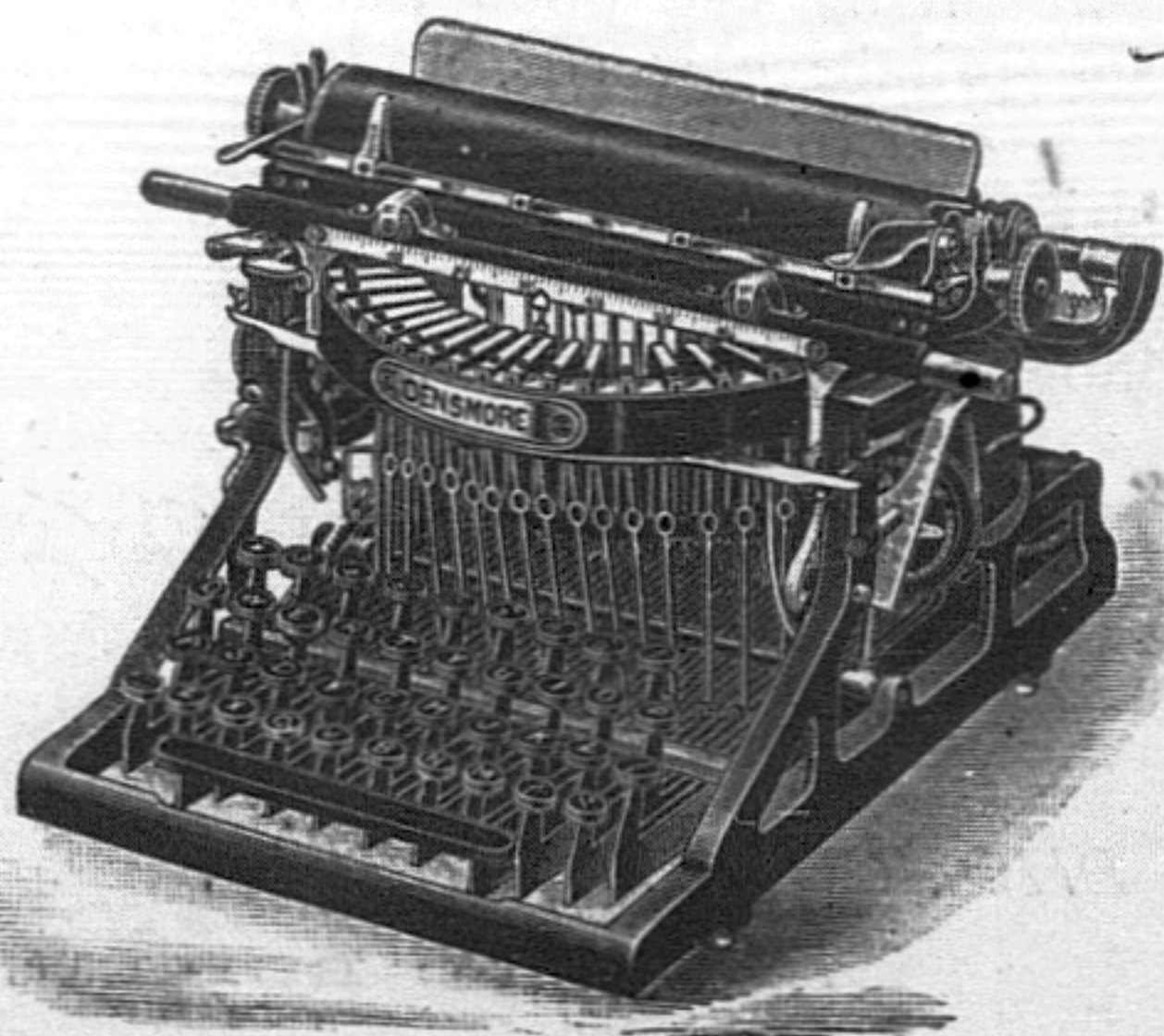
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 “ 14. Edison sitting at Laboratory table, taken 1892.
 “ 15. Edison portrait, oval, with signature, 1889.
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 “ 20. The Edison Phonograph, latest type.
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 “ 24. “ “mother.
 “ 25. “ “portrait at 4.
 “ 26. Allegorical painting—Birth of the Edison Incandescent Lamp, Menlo Park, 1875.
 “ 27. Edison's Birthplace.
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- “ 43. “ Profile, $\frac{1}{2}$ figure.
 “ 44. Edison's bust, oval, with autograph, 1889.
 “ 46. Edison, $\frac{1}{2}$ length, 1889.
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 “ 48. Edison at 14.
 “ 49. “ listening to Phonograph.
 “ 50. Edison's Mother.
 “ 51. “ First Patent, Vote Recorder, Patent sheet.
 “ 52. Edison's Newark Ward St. Factory, Edison in group, 1876.
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 “ 62. “ bust, oval, autograph attached, 1892.
 “ 63. Edison's bust, oval, autograph attached, 1889.
 “ 64. Laboratory, a corner of Library.
 “ 65. “Glenmont,” exter. view, from road fence.
 “ 66. The Edison Phonograph—latest type.
 “ 67. Precision Dept., upper shop, (laboratory.)
 “ 68. Laboratory Library, with Ferns.
 “ 69. Edison Phonograph Works.
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